

# EXHIBIT 2

(Original Exhibit Nos. 128-3, 165-4)

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**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA**

IN RE: DA VINCI SURGICAL ROBOT  
ANTITRUST LITIGATION

Lead Case No. 3:21-cv-03825-VC

**REBUTTAL EXPERT REPORT OF PROFESSOR EINER ELHAUGE**

A handwritten signature in black ink, reading "Einer Elhauge". The signature is written in a cursive, flowing style.

**March 3, 2023**

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## INTRODUCTION AND ASSIGNMENT

1. I submitted an expert report in this case on December 1, 2022.<sup>1</sup> In my Initial Report I concluded that:

- Intuitive’s da Vinci is in the U.S. market for Minimally Invasive Soft Tissue (“MIST”) surgery robots, and Intuitive has both market power and monopoly power in that market.
- EndoWrist repair and replacement is a relevant market, and Intuitive has both market power and monopoly power in that market.
- Da Vinci servicing is a relevant market, and Intuitive has both market power and monopoly power in that market.
- Intuitive’s challenged restraints foreclosed rivals in a way that acquired, enhanced, and maintained monopoly power for Intuitive in the markets for EndoWrist repair and replacement and for da Vinci service.
- Intuitive’s challenged restraints caused anticompetitive economic harm to buyers in those markets that was not offset by any procompetitive efficiencies.
- The named Plaintiffs and the proposed class have suffered substantial quantifiable damages from Intuitive’s restraints.

2. Defense expert Dr. Loren Smith submitted a report focused on criticizing my report. This rebuttal focuses on responding to his critiques. Defense experts Jason C. Goodwin and Dr. Robert D. Howe have also submitted expert reports that include criticisms of certain of my findings, so I also respond to those reports to the extent that they are relevant to my analysis.

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<sup>1</sup> See Expert Report of Professor Einer Elhauge, dated December 1, 2022, and Corrected Expert Report of Professor Einer Elhauge, dated January 10, 2023. The corrections were relatively minor and irrelevant to the defense expert critiques to which I am responding, but for clarity I will throughout this report use the phrase “Elhauge Report” or “Initial Report” to refer to the corrected version of this report. A summary of my experience and qualifications is contained in my Initial Report. An updated summary of my prior publications is shown in CV (attached as Exhibit A). Exhibit B to this rebuttal report describes my compensation and the cases in which I have testified as an expert in a trial or deposition in the past four years.

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## I. SYSTEMIC LIMITATIONS AND METHODOLOGICAL PROBLEMS WITH THE DEFENSE EXPERT REPORTS

3. As I detailed below, many of my conclusions are undisputed by any defense expert report, and indeed are often confirmed by Dr. Smith's report. To the extent Dr. Smith does contest my conclusions, he uses methodologies that are economically invalid and unreliable for various reasons, including that they: (a) are internally inconsistent; (b) use flawed economic principles; and (c) rely on baseless empirical premises. In the following, Section A summarizes many of the uncontested issues, and Section B summarizes many of Dr. Smith's methodological errors.

### *A. Defense Experts Do Not Dispute Many of My Conclusions*

4. Defense experts do not dispute my finding that the relevant geographic market is the United States.<sup>2</sup> To the contrary, Dr. Smith affirmatively argues that the U.S. market is distinctive from foreign markets, bases his own analysis on U.S. data, and states that he sees “no reason to disagree with Professor Elhauge’s assessment that the United States should be the relevant focus for assessing the alleged conduct.”<sup>3</sup>

5. Defense experts do not dispute that, if I have correctly defined the relevant markets, Intuitive’s market shares were (during the class period) 99.5-99.6% for MIST Surgery Robots, 99.87-100% for EndoWrist repair and replacement, and 99.84-100% for da Vinci servicing.<sup>4</sup> Indeed, Dr. Smith states that his only objection to my market share calculations rests on his claim that my market definitions are incorrect.<sup>5</sup> Nor do any of the defense experts dispute that, if I have correctly defined the markets, there are high barriers to entry and expansion.<sup>6</sup> Indeed, Dr. Smith agrees with my conclusion that barriers to entry are high.<sup>7</sup> Finally, no defense expert disputes my point that one can infer market power and monopoly power from high market shares and high barriers to entry and expansion.<sup>8</sup> Accordingly, no defense expert disputes that, if I have correctly defined the relevant markets, high market shares and high barriers to entry and expansion indicate that Intuitive has market

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<sup>2</sup> See Elhauge Report ¶¶ 108-110, 175-177, 226-227.

<sup>3</sup> Smith Report ¶¶ 93, 120 & n.332.

<sup>4</sup> See Elhauge Report ¶¶ 112, 179, 229 & Tables 1-2, Corrected Figure 9.

<sup>5</sup> Smith Report ¶¶ 135-136.

<sup>6</sup> See Elhauge Report ¶¶ 114-127, 180-185, 230-231.

<sup>7</sup> Smith Report n.363. Other evidence further confirms that conclusion. See Intuitive-00278203 at -04 (2019) (“We believe that Intuitive has built strong barriers to entry during the 20 years of market leadership in robotic surgery.”).

<sup>8</sup> See Elhauge Report ¶¶ 111, 128, 179, 229, 232.

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power and monopoly power in those markets. Thus, Dr. Smith's claim that Intuitive lacks market power or monopoly power fails, unless he is right on the proper market definition.

6. No defense expert disputes my point that one can infer market power and monopoly power from direct evidence that a firm has power over pricing.<sup>9</sup> Nor does any defense expert dispute that I have accurately calculated Intuitive's Lerner Index and own-price demand elasticity for da Vinci robots, instruments, and servicing.<sup>10</sup> Dr. Smith instead argues the Lerner Index and own-price demand elasticity are not valid measures of whether a firm has enough power over pricing to have market power or monopoly power.<sup>11</sup> Accordingly, Dr. Smith's claim that Intuitive lacks market power or monopoly power fails unless he is right to reject these standard economic measures of market power and monopoly power.

7. No defense expert disputes my point that one can infer market power and monopoly power from direct evidence that a firm has the power to exclude rivals.<sup>12</sup> Dr. Smith instead argues that Intuitive had no power to exclude. Accordingly, Dr. Smith's claim that Intuitive lacks market power or monopoly power fails, unless one accepts his inaccurate premise that Intuitive did not exclude rivals from the relevant markets.

8. Although Dr. Smith mistakenly argues that the relevant product market in which MIST surgery robots compete includes laparoscopic surgery and open surgery, neither he nor any other defense expert disputes that the relevant market does not include non-MIST surgery robots.<sup>13</sup>

9. If I am right that the da Vinci robot is a separate product from other surgical options and from EndoWrist repair and replacement, no defense expert disputes my showing that EndoWrist repair and replacement had no other economic substitute, that the repair and replacement of different EndoWrist models could be treated as being in one market, and that EndoWrist repairs constrain the pricing for replacement EndoWrists.<sup>14</sup> Indeed, Dr. Smith's argument that foreclosing rivals

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<sup>9</sup> See Elhauge Report ¶¶ 129, 186, 233.

<sup>10</sup> See Elhauge Report ¶¶ 130, 188-89, 235-236.

<sup>11</sup> See Smith Report ¶¶ 166-72.

<sup>12</sup> Elhauge Report ¶¶ 134-35, 190, 237-38.

<sup>13</sup> See Elhauge Report ¶¶ 103-104.

<sup>14</sup> See Elhauge Report ¶¶ 157-174.

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from repairs of EndoWrists is necessary to keep EndoWrist prices high enough to incentivize more investment necessarily depends on the last proposition being true.<sup>15</sup>

10. No defense expert disputes my showing that Intuitive's contracts with all its da Vinci robot customers prohibited those customers from buying EndoWrist repairs or da Vinci service from any third parties throughout the class period.<sup>16</sup> To the contrary, Dr. Smith explicitly confirms that Intuitive imposed these prohibitions on all customers and has done so throughout the whole class period.<sup>17</sup> Accordingly, it is undisputed that Intuitive, at a minimum, imposed exclusive dealing requirements that prohibited rival EndoWrist repairs and da Vinci service.

11. Nor does any defense expert dispute my showing that, if da Vinci robots, EndoWrist repairs, and da Vinci servicing are separate products, throughout the class period Intuitive systemically tied for all its customers (a) the da Vinci robots to EndoWrist repairs and da Vinci services and (b) da Vinci services to EndoWrist repairs.<sup>18</sup> To the contrary, Dr. Smith explicitly confirms that Intuitive required that all its customers buy a bundle that included a da Vinci robot, new and replacement instruments, and da Vinci servicing from Intuitive, and has done so throughout the whole class period.<sup>19</sup> He also explicitly declines to contest my showing that Intuitive also denied da Vinci service to hospitals that purchased EndoWrist repairs from rivals and that, if those are separate products from each other, that constitutes another tie.<sup>20</sup>

12. No defense expert disputes that there are contestable and incontestable da Vinci services, and that Intuitive's contracts also bundled them together.<sup>21</sup>

13. No defense expert disputes my conclusions about: (a) when rivals first offered EndoWrist repair and da Vinci servicing; (b) the fact that Intuitive's ties drove rivals out of EndoWrist repair and da Vinci servicing and when they did so; and (c) the

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<sup>15</sup> See Smith Report at pp.8-9, ¶ 212; *see also id.* ¶ 128 (acknowledging it is plausible that rival repairs would constrain Intuitive pricing even if the da Vinci robot and EndoWrist were deemed a single product).

<sup>16</sup> See Elhauge Report ¶¶ 242-260.

<sup>17</sup> See Smith Report ¶ 84.

<sup>18</sup> See Elhauge Report ¶¶ 242-260.

<sup>19</sup> See Smith Report ¶ 84 & n.295.

<sup>20</sup> See Smith Report n.295.

<sup>21</sup> See Elhauge Report ¶¶ 222-225, 246, 255-56; Smith Report ¶ 257 & n.295 (adopting or declining to contest those claims).

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fact that without the challenged restraints it would have been feasible for third party repair companies to compete in the EndoWrist repair and da Vinci service markets.<sup>22</sup>

14. No defense expert disputes my conclusion that the challenged restraints caused a loss of buyer choice.<sup>23</sup> Indeed, Dr. Smith affirmatively acknowledges that the restraints *do* restrict buyer choice, although he claims that loss of buyer choice is justified because he argues that hospitals and surgeons have incentives to make unsafe choices unless their choices are restrained.<sup>24</sup>

15. No defense expert denies that the restraints increased environmental costs,<sup>25</sup> although Dr. Smith offers the bald assertion that this effect should be disregarded because he deems third-party companies to be rent extractors, rather than “real” competitors.<sup>26</sup>

16. No defense expert denies that, if I am right that Intuitive had market power, the exclusion of rivals via the challenged restraints would raise prices and lower output for both EndoWrists and da Vinci servicing.<sup>27</sup>

17. No defense expert disputes my conclusion that Intuitive rolled out its Extended Use Program in 2020 in response to competitive pressure, and that this program lowered the per-use EndoWrist price.<sup>28</sup> Indeed, Dr. Smith explicitly confirms both points.<sup>29</sup>

18. No defense expert disputes my conclusions that, if I am right on market definition and market power, the single monopoly profit theory does not apply to the ties here.<sup>30</sup> To the contrary, Dr. Smith instead argues that my showing that the single

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<sup>22</sup> See Elhauge Report Section IV.

<sup>23</sup> See Elhauge Report ¶¶ 345-346.

<sup>24</sup> See Smith Report ¶209.

<sup>25</sup> See Elhauge Report ¶¶ 349.

<sup>26</sup> Smith Report ¶ 231.

<sup>27</sup> See Elhauge Report ¶¶ 333-339.

<sup>28</sup> Elhauge Report ¶¶ 342-43, 360.

<sup>29</sup> Smith Report ¶¶ 205, 220 & nn. 644-645. Dr. Smith does claim that the competition to which the Extended Use Program responded was traditional laparoscopy, rather than entrants into the EndoWrist repair and replacement market. *Id.* ¶ 205. But either way it was a response to competitive pressure, and the timing of the program conflicts with Dr. Smith’s claim that the competitive pressure came from traditional laparoscopy, rather than from EndoWrist repair entry. See *infra* Section VI.A.2.iii.

<sup>30</sup> Elhauge Report ¶¶ 369-375.

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monopoly profit theory does not apply here does not matter because Intuitive lacks market power.<sup>31</sup>

19. No defense expert disputes that Intuitive and industry analysts projected shares for rivals offering EndoWrist repairs that ranged from 10-15% and either modeled shares ranging up to 50% or concluded that those projected shares would be even higher without the challenged restraints.<sup>32</sup>

20. No defense expert disputes that the rival provision of da Vinci servicing does not require 510(k) clearance, and Mr. Goodwin affirmatively agrees with me and plaintiff expert Kimberly Trautman that servicing does not require 510(k) clearance.<sup>33</sup>

21. No defense expert disputes my showing that, regardless of whether 510(k) clearances might ultimately be deemed legally necessary, both Intuitive and rivals in fact launched and successfully sold repaired or modified EndoWrists to hospitals before obtaining any 510(k) clearance.<sup>34</sup>

22. No defense expert disputes my showing that suppressing use limits would create anticompetitive economic harms,<sup>35</sup> although Dr. Smith does dispute whether the challenged restraints actually suppressed use limits.<sup>36</sup>

23. No defense expert disputes my conclusion that for any given EndoWrist model, Intuitive charges essentially the same price to all customers. To the contrary, Dr. Smith explicitly confirms that conclusion.<sup>37</sup>

24. No defense expert disputes my showing that, if I am right on liability issues, consumers suffered large amounts of damages.<sup>38</sup> Indeed, Dr. Smith affirmatively

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<sup>31</sup> Smith Report ¶229.

<sup>32</sup> Elhauge Report ¶ 357.

<sup>33</sup> Goodwin Report ¶ 11; Elhauge Report ¶¶ 59-60; Trautman Report ¶¶ 19, 29, 35.

<sup>34</sup> Elhauge Report ¶¶ 285-286, 289, 292.

<sup>35</sup> See Elhauge Report ¶¶ 340-344, 358-363.

<sup>36</sup> Smith Report ¶197.

<sup>37</sup> Smith Report ¶143 (“Intuitive’s instrument pricing does not appear to differ within the same period for customers who have purchased the same instrument. . . . when looking across all of Intuitive’s instruments sold during 2021, on average, 96 percent of customers paid the same price for the specific instrument.”).

<sup>38</sup> Dr. Smith in his deposition did claim damages were \$0, but he based that claim on an assumption that plaintiffs would not prevail in showing anticompetitive effects. See *infra* Section VII.B.



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concludes that, even with his downward adjustments to my damages estimates, buyers in this market suffered over \$419 million in damages and the named plaintiffs collectively suffered over \$1 million in damages through the end of 2021.<sup>39</sup>

### ***B. Dr. Smith Uses Unreliable Economic Methodologies***

25. With respect to my conclusions that Dr. Smith does contest, he repeatedly uses methodologies that are economically invalid and unreliable for various reasons. First, many of his methodologies are internally inconsistent. Second, he repeatedly uses methodologies that rely on flawed economic principles that conflict with economics textbooks and the very treatise on which he relies. Third, he repeatedly relies on baseless assumptions or empirical premises that conflict with the data and other evidence. I summarize many of his methodological errors in each of those categories in the following sections.

#### ***1. Dr. Smith's Methodologies Are Internally Inconsistent***

26. Dr. Smith's methodologies are unreliable as a matter of economics because they repeatedly rely on empirical premises and theoretical methods that are inconsistent with other empirical conclusions or theoretical methods that he uses. His internal inconsistencies include the following.

27. Dr. Smith's lead argument in his report is that Intuitive's challenged restraints were pro-competitive, because they preserved Intuitive investment incentives by foreclosing rival competition in EndoWrist repair and da Vinci servicing that would otherwise have taken away significant sales from Intuitive and significantly reduced Intuitive's prices and profits.<sup>40</sup> But he also argues that, even without the challenged restraints, hospitals would have been reluctant to use rivals, so that rivals might have taken away only "a small share of sales" and failed to reduce Intuitive's prices.<sup>41</sup> It is inconsistent to claim that without the restraints: (a) rivals **would** have taken away significant sales from Intuitive and depressed Intuitive's prices (when that benefits his investment incentives claim); and (b) rivals **would not** have taken away significant sales from Intuitive or depressed Intuitive's prices (when that benefits his claim of a lack of anticompetitive economic harms).

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<sup>39</sup> Smith Report ¶ 268 & Table 5.

<sup>40</sup> See Smith Report at pp. 8-9, ¶¶ 212, 214, 217-219.

<sup>41</sup> See Smith Report ¶ 244.

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28. Dr. Smith's investment incentives argument also depends on his claim that the challenged restraints enabled Intuitive to recoup its sunk investment costs by charging high margin prices that are well above what it would face with repair and service competition.<sup>42</sup> That argument conflicts with his other claims that (a) Intuitive has no market power to raise prices above competitive levels at all,<sup>43</sup> and (b) without the restraints, Intuitive would actually charge even higher prices and earn even more.<sup>44</sup>

29. Dr. Smith's analysis of pricing trends is also internally inconsistent. When trying to disprove market power, Dr. Smith finds that from 2014-2021 real prices declined not only for EndoWrist instruments, but also for the da Vinci robot and da Vinci servicing.<sup>45</sup> However, when trying to disprove anticompetitive economic harms, he asserts that when Intuitive faced rivals offering EndoWrist repairs from 2018-2021, "Intuitive reduced its price on instruments and increased its price on the platform or on its servicing plans."<sup>46</sup> It is inconsistent to claim during the same time period that da Vinci robot and servicing prices (a) *decreased* (when that benefits his argument there was no market power) and *increased* (when that benefits his argument there was no anticompetitive economic harm).

30. Dr. Smith also uses inconsistent methodologies by asserting that evidence of unbundling is irrelevant to market definition if it occurs in foreign markets,<sup>47</sup> while simultaneously arguing that evidence of bundling in foreign markets is not only relevant to, but determinative of, market definition.<sup>48</sup> Setting aside the fact that he is wrong that the latter evidence showed the same sort of bundling that Intuitive engages in here,<sup>49</sup> it is methodologically inconsistent to treat foreign bundling practices as (1) *irrelevant* when they indicate unbundling that disfavors Intuitive's position, but (2) *highly relevant* (indeed determinative) when he thinks they indicate bundling that favors Intuitive's position.

31. Dr. Smith also uses inconsistent methodologies on the connection between innovation investments and market power. He argues that continued investment in

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<sup>42</sup> See Smith Report at pp.8-9, ¶¶ 212, 214, 217-219.

<sup>43</sup> See Smith Report ¶¶ 106-136.

<sup>44</sup> See Smith Report ¶¶ 221-230, 244.

<sup>45</sup> Smith Report ¶¶ 141-150 & pp. A-25 to A-28.

<sup>46</sup> See Smith Report ¶ 221.

<sup>47</sup> Smith Report ¶93.

<sup>48</sup> Smith Report ¶¶90, 94-95.

<sup>49</sup> See *infra* Section II.B.1.iii.



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innovation indicates a lack of market power.<sup>50</sup> But that claim conflicts with his other claim that Intuitive's incentives to invest in innovation depended on it preventing rival repair and service competition in order to keep its prices high (i.e., on it being able to maintain a market power to charge elevated prices).<sup>51</sup> It is methodologically inconsistent to assume, as Dr. Smith does, that continued innovation both (a) *disproves* market power and (b) *requires* market power.

32. Dr. Smith also uses inconsistent methodologies on market definition. On the one hand, he claims that a relevant market should always be expanded to include the next-closest substitute, which he argues means that the product market for MIST surgery robots must be expanded to include other surgical options.<sup>52</sup> On the other hand, he agrees that the relevant geographic market is the U.S., rather than concluding that this geographic market must be expanded to include whatever other nation would be the next-closest substitute.<sup>53</sup> It is methodologically inconsistent to both (a) assume that markets must always *include* the next-closest substitute when defining one market and (b) to define another market to *exclude* the next-closest substitute.

33. Dr. Smith's market definition analysis is also internally inconsistent in how he treats buyer switching in response to price increases. He claims that market definition analysis should consider whether hospitals would switch to other products in response to a price increase only if they *would* switch, but not if they would *not* switch.<sup>54</sup> It is methodologically inconsistent to both (a) deem switching in response to a price increase as *relevant* to market definition and (b) treat non-switching in response to a price increase as *irrelevant* to market definition. His inconsistent approach would always produce a conclusion that any product market should be broadened.

34. Dr. Smith's market definition analysis is also internally inconsistent in how he treats product differentiation. In parts of his analysis, he stresses that products of different quality can still compete with each other in the same differentiated market, relying on this point to support his claim that other surgical options are in the same market as MIST surgery robots.<sup>55</sup> In other parts of his analysis, he argues that products of different quality cannot be competitors, relying on this point to support

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<sup>50</sup> Smith Report ¶¶ 134, 178

<sup>51</sup> See Smith Report at pp.8-9, ¶¶ 212, 214, 217-219.

<sup>52</sup> Smith Report at p.83, title heading §IV.D (capitalization removed); *id.* ¶136.

<sup>53</sup> Smith Report ¶¶ 93, 120 & n.332.

<sup>54</sup> Smith Report ¶ 132.

<sup>55</sup> Smith Report ¶¶15 (at p.11-13), 107-108.

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his claim that rivals who offer EndoWrist repairs or da Vinci servicing do not compete with Intuitive because their products vary in quality.<sup>56</sup> It is methodologically inconsistent to simultaneously deem products of differing quality as (a) in the same market (when that benefits his argument to broaden the product market definition) but (b) as incapable of being in the same market (when that benefits his argument that independent repair companies are not rivals and thus cannot be foreclosed).

35. Dr. Smith also employs inconsistent methodologies in assessing what counts as innovative. He treats extending the allowed uses of EndoWrists as “innovation” when done by Intuitive.<sup>57</sup> In contrast, he treats extending the allowed uses of EndoWrists as illegitimate competition when done by its rivals.<sup>58</sup> It is methodologically inconsistent to deem extended uses as (a) innovative when done by Intuitive and (b) illegitimate when done by rivals.

36. Dr. Smith also employs inconsistent methodologies in assessing the relationship between competition and incentives to innovate. In arguing that the challenged restraints had a procompetitive justification, he claims that suppressing competition necessarily encourages more investments in innovation.<sup>59</sup> In contrast, when arguing that the market definition should include laparoscopic and open surgery, he asserts that competition from laparoscopic and open surgery not only spurred all Intuitive’s innovation investments, but also was necessary to give Intuitive any incentive to make those investments.<sup>60</sup> It is methodologically inconsistent to assume that innovation both (a) requires *suppressing* competition (when that benefits his procompetitive justification argument) and (b) requires *having* competitive pressure (when that benefits his market definition argument).

37. Dr. Smith likewise employs inconsistent methodologies in assessing whether the challenged restraints could affect incentives to invest. He claims that the the challenged restraints were necessary for Intuitive to have any incentive to invest, but yet also claims that the challenged restraints could not have affected rival incentives to invest to create their products at all.<sup>61</sup> It is methodologically inconsistent to assume that the challenged restraints both (a) were *necessary* for Intuitive’s investment incentives and (b) had *no effect* on rival investment incentives.

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<sup>56</sup> Smith Report ¶ 231.

<sup>57</sup> Smith Report ¶ 220.

<sup>58</sup> *Id.* n.437 & Part VII.

<sup>59</sup> See Smith Report at pp.8-9, ¶¶ 212, 214, 217-219.

<sup>60</sup> See Smith Report ¶ 134.

<sup>61</sup> See *infra* Sections VI.A, VII.A.

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## *2. Dr. Smith's Methodologies Rely on Flawed Economic Principles*

38. Dr. Smith's methodologies are also unreliable as a matter of economics because they repeatedly use flawed economic principles that conflict with economics textbooks and the very treatise on which he relies. His deviations from fundamental economic principles include the following.

39. Dr. Smith assumes that the absence of price discrimination proves an absence of market power, contrary to economics textbooks and without citing any literature supporting his theoretical assumption.<sup>62</sup>

40. Dr. Smith assumes there can be no price discrimination if a uniform price is charged for a tied product, contrary to the literature that shows that if greater usage of the tying product results in more tied product purchases, then such a tie creates price discrimination if the uniform tied product price is inflated.<sup>63</sup>

41. Dr. Smith assumes that the absence of price increases over time disproves a separate market and market power, contrary to the antitrust guidelines and economics textbooks and without citing any literature to support his theoretical assumption.<sup>64</sup>

42. Dr. Smith assumes that a firm's ongoing investments in innovation shows that a product has close substitutes and lacks market power, contrary to economics textbooks and without citing any literature to support his theoretical assumption.<sup>65</sup>

43. Dr. Smith assumes that a relevant product market should always be expanded to include the next-closest substitute, contrary to the antitrust guidelines and economic tests of market definition that he himself acknowledges are well-recognized, and without citing any literature to support his theoretical assumption.<sup>66</sup> His position is so economically flawed that it would produce the absurd result that all product markets should be expanded to encompass the whole economy and all geographic markets should be expanded to encompass the entire globe.<sup>67</sup>

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<sup>62</sup> See *infra* Section II.A.1.i.

<sup>63</sup> See *infra* Section II.A.1.i.

<sup>64</sup> See *infra* Section II.A.1.ii.

<sup>65</sup> See *infra* Section II.A.1.iii.

<sup>66</sup> See *infra* Section II.A.1.iv.

<sup>67</sup> See *infra* Section II.A.1.iv.

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44. Dr. Smith assumes that an overlap in end use necessarily places two items in the same market and disproves Intuitive's market power, contrary to the antitrust guidelines and the economics of market definition and without citing any literature to support his theoretical assumption.<sup>68</sup>

45. Dr. Smith assumes that the existence of inframarginal customers disproves my conclusions about market definition and Intuitive's market power, contrary to the antitrust guidelines and the economics of market definition and without citing any literature to support his theoretical assumption.<sup>69</sup>

46. Dr. Smith assumes that the first entrant into a new market with 100% market share cannot have market power, without citing any literature to support his theoretical assumption.<sup>70</sup>

47. Dr. Smith assumes that if a new product was in a broader product market when it was first launched, it must remain in that broader product market later in time, contrary to textbook analyses of market definition and without citing any literature to support his theoretical assumption.<sup>71</sup>

48. Dr. Smith assumes that if two items are interdependent complements with each other, they must be parts of a single product, contrary to the treatise on which he relies and without citing any literature to support his theoretical assumption.<sup>72</sup>

49. Dr. Smith assumes that two items cannot be separate products if there is a procompetitive justification for tying them together, contrary to the treatise on which he relies and without citing any literature to support his theoretical assumption.<sup>73</sup>

50. Dr. Smith assumes that if two items are bundled by some firms but unbundled by other firms, then that suffices to prove the two items are a single product, contrary to the treatise on which he relies and without citing any literature to support his theoretical assumption.<sup>74</sup>

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<sup>68</sup> See *infra* Section II.A.1.v.

<sup>69</sup> See *infra* Section II.A.1.vi.

<sup>70</sup> See *infra* Sections II.A.1.ii & II.B.1.iv.

<sup>71</sup> See *infra* Section II.B.1.iv.

<sup>72</sup> See *infra* Section II.B.1.i.

<sup>73</sup> See *infra* Section II.B.1.ii.

<sup>74</sup> See *infra* Section II.B.1.iii.

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51. Dr. Smith assumes that the fact that a firm has long tied two items together alone suffices to prove they are a single product, contrary to the treatise on which he relies and without citing any literature to support his theoretical assumption.<sup>75</sup>

52. Dr. Smith assumes that if some of the bundled items are useless without each other, or if multiple bundled items are needed to achieve some result, those items should be considered part of a single integrated product, contrary to the treatise on which he relies and without citing any literature to support his theoretical assumption.<sup>76</sup>

53. Dr. Smith assumes that if a firm sells multiple items in a single contract, that makes those items a single product.<sup>77</sup> Dr. Smith cites no literature to support his flawed assumption. His approach literally is the same as an assumption that contractual tying can never exist, because if two items are bundled in a contract they would (under his assumption) become a single product incapable of being tied.

54. Dr. Smith assumes, contrary to economics textbooks, that the Lerner Index cannot be a valid measure of power over prices because it is based on a relationship between prices and marginal costs that does not include sunk costs.<sup>78</sup>

55. Dr. Smith assumes, contrary to economics textbooks, that a firm's low own-price demand elasticity cannot provide a useful indicator of power over price and of a low consumer willingness to substitute to other firms and products.<sup>79</sup>

56. Dr. Smith assumes without any supporting literature that, if desirable incentives to innovate require some protection from competition, then maintaining such incentives requires not only whatever protection patent law provides against competition with that innovation, but also requires allowing the firm to engage in anticompetitive restraints that exclude competition further than patent law does, so the firm can reap profits greater than the ordinary patent reward.<sup>80</sup>

57. Dr. Smith assumes that a tying restraint that precludes all buyers from choosing a rival tied product does not foreclose any subset of those buyers who would have chosen to buy the tied product from the defendant in a but-for world

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<sup>75</sup> See *infra* Section II.B.1.iv.

<sup>76</sup> See *infra* Section II.B.1.v.

<sup>77</sup> See *infra* Section II.B.1.vi.

<sup>78</sup> See *infra* Section III.B.1.

<sup>79</sup> See *infra* Section III.B.1.

<sup>80</sup> See *infra* Sections III.B.1 & VI.A.

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without that restraint, contrary to the treatise on which he relies and without citing any literature to support his theoretical assumption.<sup>81</sup>

58. Dr. Smith assumes that any procompetitive effect justifies a restraint, no matter how large the anticompetitive economic harm and how weak the procompetitive effect, contrary to standard antitrust economics and without citing any literature to support his theoretical assumption.<sup>82</sup>

59. Dr. Smith assumes (without citing any supporting literature) that failing to prove market power establishes the absence of anticompetitive economic harms, contrary to the standard principle of antitrust economics, stated in the antitrust treatise on which he relies, that direct proof of actual anticompetitive economic harms can obviate the need to prove market power.<sup>83</sup>

60. Dr. Smith assumes (without citing any supporting literature) that tying can create anticompetitive economic harms only if a firm has monopoly power, which conflicts with the economic literature showing that tying market power or a substantial tied foreclosure share can suffice.<sup>84</sup>

61. Dr. Smith assumes that profit-maximizing firms will not set prices based on marginal costs but rather will set them based on all costs (including sunk or fixed costs), contrary to economics textbooks.<sup>85</sup>

62. Dr. Smith assumes that evidence that, with the challenged restraints, Intuitive sometimes offered discounts from actual list prices on da Vinci robots shows that those restraints lowered prices, contrary to the standard economics textbook principle that a restraint lowers prices only if it results in prices that are lower than prices would have been without the restraint.<sup>86</sup>

63. Dr. Smith assumes (without any support in the literature or evidence) that the current scope of intellectual property (IP) protection does not produce an economically optimal level of innovation investments.<sup>87</sup>

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<sup>81</sup> See *infra* Section IV.B.3.

<sup>82</sup> See *infra* Part VI.

<sup>83</sup> See *infra* Part VI.

<sup>84</sup> See *infra* Part VI.

<sup>85</sup> See *infra* Section III.B.1.

<sup>86</sup> See *infra* Section VI.B.2.iii.

<sup>87</sup> See *infra* Part VI.A.



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64. Dr. Smith assumes (again without any support in the literature of evidence) that if IP protection were insufficient to incentivize optimal innovation investments, then innovation incentives would be closer to optimal if firms with IP rights were able to set the scope of their protection from competition for themselves by imposing private restraints that exclude competition by more than IP rights would.<sup>88</sup>

65. Dr. Smith assumes (again without any support in the literature or evidence) that suppressing competition necessarily encourages greater investment in innovation, which conflicts with findings in the economic literature that competitive markets produce more innovation than monopoly markets.<sup>89</sup>

66. Dr. Smith relies on a theoretical economic claim that bundling complementary goods will lower prices, but his claim conflicts with the very economic literature he cites, which not only shows that this may not happen, but also shows that bundling will increase prices under circumstances like this case.<sup>90</sup>

67. Dr. Smith relies on a theoretical economic claim that if firms did not actually enter into a market earlier or with a broader scope in a world with anticompetitive restraints, then firms would not have entered into a market earlier or with a broader scope in a but-for world without those anticompetitive restraints.<sup>91</sup> He cites no literature for that theoretical claim, which conflicts with the fundamental economic principle that the but-for world is defined by what firms would have done differently without anticompetitive restraints.<sup>92</sup> He theoretical claim also conflicts with empirical evidence that rivals would have entered into the markets earlier or with a broader scope in a but-for world without those anticompetitive restraints.<sup>93</sup>

### *3. Dr. Smith Relies on Empirical Premises that Are Baseless and False*

68. Dr. Smith's methodologies are unreliable as a matter of economics because they repeatedly rely on factual assumptions that are baseless or conflict with the data and other evidence. Examples include the following.

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<sup>88</sup> See *infra* Part VI.A.

<sup>89</sup> See *infra* Part VI.A.

<sup>90</sup> See *infra* Section VI.B.

<sup>91</sup> See *infra* Section VII.A.

<sup>92</sup> See *infra* Section VII.A.

<sup>93</sup> See *infra* Section VII.A.

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69. Dr. Smith assumes that Intuitive engaged in no price discrimination, ignoring data that indicate extensive price discrimination on da Vinci robot sales.<sup>94</sup>

70. Dr. Smith assumes that Intuitive had no market power in 1998-99, when Intuitive had a 100% share of MIST surgery robot sales, but he cites no supporting evidence for that assumption, which conflicts with the available evidence.<sup>95</sup>

71. Dr. Smith assumed in his report that Intuitive's prices have not increased since 1998-99, but he cited no evidence to support that assumption, and in his deposition he admitted that he had no data on prices for EndoWrist instruments or da Vinci service prior to 2012.<sup>96</sup> Further, his assumption conflicts with data showing that Intuitive's da Vinci robot prices have in fact increased sharply since 1998-99.<sup>97</sup>

72. Dr. Smith asserts that, from the time Intuitive launched in 1998-99, Intuitive has always included the same contractual terms bundling the da Vinci robot to a prohibition on rival instrument repairs and rival da Vinci servicing, but his assertion conflicts with Intuitive's actual contracts from that period.<sup>98</sup>

73. Dr. Smith asserted in his report that it was not feasible to unbundle the da Vinci robot from EndoWrist repairs or da Vinci servicing, but he cited no evidence to support such an assertion, and in his deposition he admitted that that it was possible to unbundle the da Vinci robot from EndoWrist instruments.<sup>99</sup> Further, his report's assertion conflicts with the evidence that Intuitive itself has sold them separately with separate purchase orders, separate pricing, and separate deliveries and that rivals have sold EndoWrist repairs and da Vinci servicing without selling the da Vinci robot.<sup>100</sup>

74. Dr. Smith asserts that refurbished EndoWrists were inferior in quality to new EndoWrists, which conflicts with evidence that refurbished EndoWrists were deemed equivalent in quality to new EndoWrists by hospitals and independent repair companies and as good or better than new EndoWrists by industry analysts and Intuitive itself.<sup>101</sup>

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<sup>94</sup> See *infra* Section II.A.1.i.

<sup>95</sup> See *infra* Section II.A.1.ii & II.B.1.iv.

<sup>96</sup> See *infra* Section II.A.1.ii.

<sup>97</sup> See *infra* Section II.A.1.ii.

<sup>98</sup> See *infra* Section III.B.

<sup>99</sup> See *infra* Section II.B.2.i.

<sup>100</sup> See *infra* Section II.B.2.i.

<sup>101</sup> See *infra* Sections III.B.3 & VI.C.



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75. Dr. Smith asserts that 2017 Project Dragon proposals to lower Intuitive's EndoWrist prices could not have been a response to the threat of competition from rivals because those rivals entered starting in 2018, which ignores undisputed evidence that Intuitive was well aware in 2016 that rivals were planning to enter.<sup>102</sup>

76. Dr. Smith argues that rival-repaired EndoWrists were not functionally equivalent to Intuitive's EndoWrists, ignoring copious evidence to the contrary.<sup>103</sup>

77. Dr. Smith argues that greater competition from rivals providing EndoWrist repair might have caused Intuitive to raise prices for da Vinci robots or da Vinci servicing, even though that claim conflicts with his own pricing data, which shows that actual increases in competition from rivals providing EndoWrist repair services resulted in lower Intuitive prices on da Vinci robots and da Vinci servicing.<sup>104</sup>

78. Dr. Smith assumes that, without the challenged restraints, rival competition would have lowered Intuitive's profits sufficiently that it would not have invested in innovation, but he cites no supporting evidence for that assumption, which also conflicts with data showing that Intuitive's profits without the challenged restraints would have far exceeded the costs of its investments in innovation.<sup>105</sup> His assumption also conflicts with data showing that: (i) the percentage of revenue spent on R&D was lower for Intuitive than for firms that did not use similar restraints; and (ii) the percentage of revenue that Intuitive spent on R&D increased when it faced competition and decreased when it did not. Further, the only new Intuitive product innovation that Dr. Smith claims could have been affected by the suppression of but-for entry since 2017 is the Extended Use program, which he admits was a response to competitive pressure.<sup>106</sup>

79. Dr. Smith asserts that the challenged ties enabled Intuitive to sometimes offer discounts, but the only evidence he offers for this claim are discounts from the list price on the da Vinci robot that would have been possible without any tie and that do not constitute discounts from but-for prices.<sup>107</sup>

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<sup>102</sup> See *infra* Section V.B.1.

<sup>103</sup> See *infra* Sections III.B.3, V.B.3 & VI.C.

<sup>104</sup> See *infra* Section V.B.4.

<sup>105</sup> See *infra* Section VI.A.

<sup>106</sup> See *infra* Section VI.B.

<sup>107</sup> See *infra* Section VI.B.2.iii.

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80. Dr. Smith asserts that the challenged ties enabled Intuitive to offer leasing arrangements, but he provides no reasoning or evidence to support his claim, which conflicts with evidence that Intuitive has entered into leasing contracts for the da Vinci robot that are separate from purchase orders for EndoWrists.<sup>108</sup>

81. Dr. Smith asserts that any obstacles to early entry by EndoWrist repair rivals would have also applied to da Vinci servicing repair rivals, without providing any evidentiary support for that assertion.<sup>109</sup>

## II. MARKET DEFINITION

### *A. MIST Surgical Robots Are a Relevant Market*

82. My Initial Report concluded that there is a relevant antitrust market consisting of Minimally Invasive Soft-Tissue (“MIST”) surgical robots. Dr. Smith claims that the relevant market should be expanded to include additional surgical solutions. His claim suffers from several flaws that are detailed in the sections that follow. First, there is no economic basis for Dr. Smith’s claimed metrics to show the market must be broader and that no market power exists. Indeed, his claimed metrics repeatedly conflict with the economic literature and thus show that his market definition analysis uses an unreliable economic methodology. Second, Dr. Smith’s market definition analysis ignores the evidence that MIST surgery robots have strong functional advantages over traditional surgery options. Third, Dr. Smith ignores or misinterprets evidence that Intuitive and other industry participants did not treat traditional surgeries as close substitutes for MIST surgical robots. Fourth, Dr. Smith ignores or misinterprets evidence that da Vinci prices were elevated above competitive levels. Fifth, Dr. Smith mischaracterizes my market definition analysis in other ways.

#### *1. Dr. Smith’s Market Definition Analysis Depends on Many Economically Invalid and Unreliable Methodologies*

83. Dr. Smith puts forward six metrics that he claims demonstrate that close substitutes for MIST surgery robots constrain their pricing to competitive levels and

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<sup>108</sup> See *infra* Section VI.B.2.iv.

<sup>109</sup> See *infra* Section VII.A.1.

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indicate that Intuitive lacks market power. Each of his six metrics reflects a fundamentally mistaken and unreliable economic methodology.

**i. An Absence of Price Discrimination Does Not Disprove Market Definition or Market Power**

84. Dr. Smith asserts that if a company does not price discriminate, this shows that close substitutes “competitively constrained” the prices for its product and that the company lacks market power.<sup>110</sup>

85. Dr. Smith cites no economic literature to support his assertion. This is not surprising because his assertion is inconsistent with the economic fundamentals of price discrimination. Economics textbooks make clear that price discrimination requires *three* conditions: (1) market power; (2) an ability to distinguish between buyers willing to pay high prices and those willing to pay only lower prices; and (3) an ability to prevent resales from buyers paying the low prices to other buyers who would be willing to pay higher prices.<sup>111</sup> Thus, an inability to price discriminate does not indicate a firm lacks market power because a firm with market power could still not price discriminate unless the other two conditions were also satisfied.<sup>112</sup> In contrast, these economics textbooks indicate that an ability to price discriminate does indicate a firm has economic market power because such market power is a necessary condition for price discrimination. The reason is that, without economic market power, rivals would undercut the higher of the prices offered by the price discriminator. In short, while the absence of price discrimination does not disprove market power, the presence of price discrimination does prove economic market power.

86. Dr. Smith is also incorrect that the evidence shows that Intuitive does not price discriminate among different buyers of da Vinci robots. Dr. Smith relies on evidence

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<sup>110</sup> Smith Report ¶¶ 105, 151-54.

<sup>111</sup> See F.M. SCHERER & DAVID ROSS, INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE 488 (1990); DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION 294 (4th ed. 2005).

<sup>112</sup> See also DOJ/FTC Horizontal Merger Guidelines §3 (2010) (“For price discrimination to be feasible, two conditions typically must be met: . . . First, the suppliers engaging in price discrimination must be able to price differently to targeted customers than to other customers. . . . Second, the targeted customers must not be able to defeat the price increase of concern by arbitrage, e.g., by purchasing indirectly from or through other customers.”).

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that, for any specific instrument, customers almost always paid the same price.<sup>113</sup> But Dr. Smith’s claim that this proves that Intuitive engaged in no price discrimination among buyers of da Vinci robots fails for two reasons.

87. **First**, Dr. Smith ignores the fact that Intuitive does charge different customers different prices for da Vinci robots. The following scatterplot shows the different prices that Intuitive charged in each month for Intuitive’s current biggest selling da Vinci robot, the Xi (which has product code IS4000). As the scatterplot shows, in each month there was widespread variation in the prices that Intuitive charged different customers for the Xi robot. Similar price dispersion exists for other da Vinci robot models.<sup>114</sup> Although Dr. Smith ignores this evidence of price discrimination on robot prices in his analysis of market power, elsewhere he acknowledges that it occurred.<sup>115</sup>

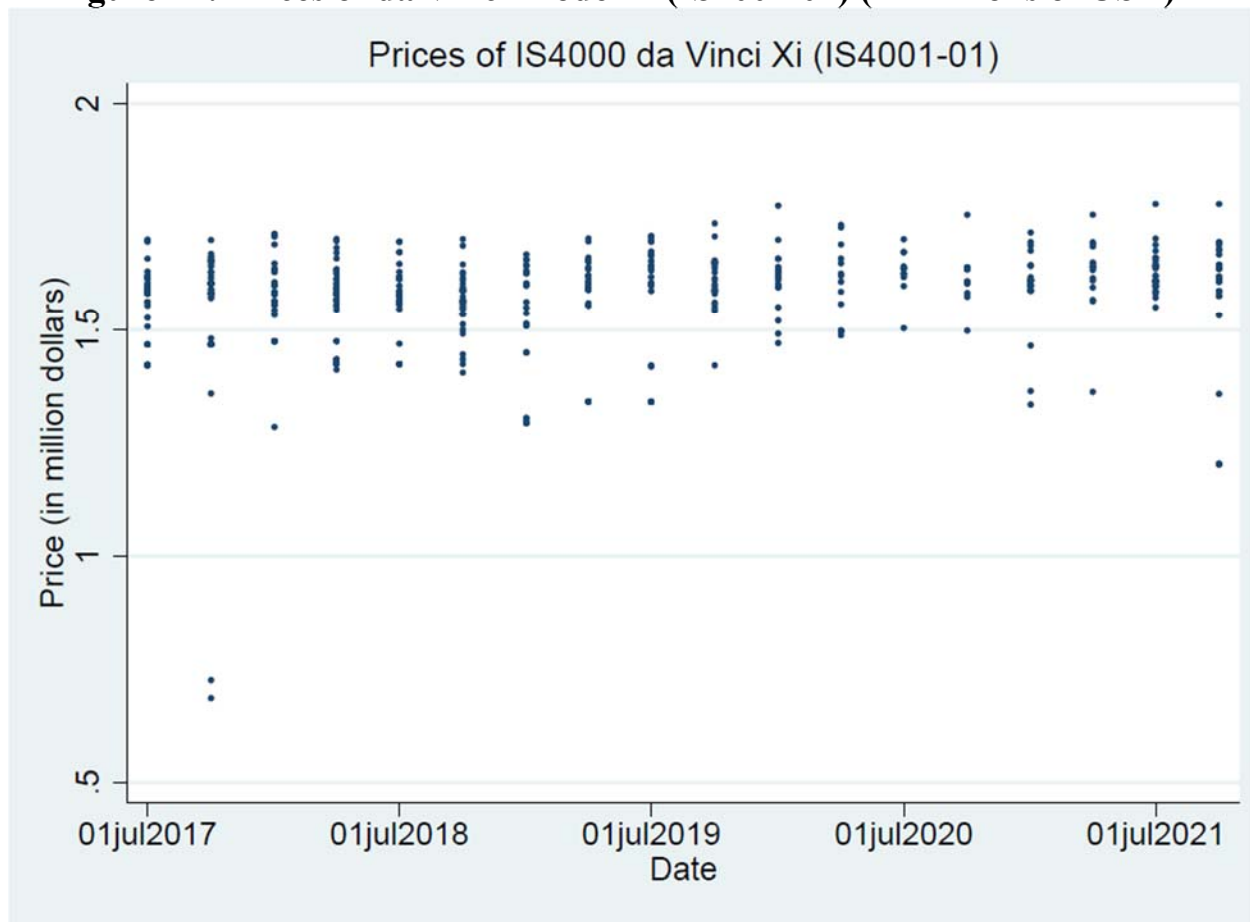
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<sup>113</sup> Smith Report ¶143 (“Intuitive’s instrument pricing does not appear to differ within the same period for customers who have purchased the same instrument. . . . when looking across all of Intuitive’s instruments sold during 2021, on average, 96 percent of customers paid the same price for the specific instrument.”); Smith Report ¶ 152 (citing similar conclusion in my initial report, which found that the price paid for any given instrument model was the same for 98% of transactions and customers and that the average discount was less than 1%). Consistent with this evidence, Dr. Smith finds that the per-procedure price for instruments is similar but a bit lower at hospitals whose da Vinci share of procedures is relatively high. Smith Report ¶¶ 153-54. This evidence is consistent because hospitals with a higher da Vinci share are more likely to have the higher volume that receives small instrument discounts. Moreover, hospitals with a higher da Vinci share may use a different mix of instruments, so may pay a lower average per-procedure price for instruments even when each instrument is sold at the same price to all customers. Smith Report ¶143.

<sup>114</sup> See Smith Rebuttal Workpapers (“cleaned\_systems.csv”, “4.1 revenue share by system.R”, “4.2 analyze price per system”).

<sup>115</sup> See Smith Report ¶ 225a (indicating that Intuitive offered discounts on the da Vinci robot to particular buyers); *id.* at pp. 12-13 (although claiming that Intuitive prices for EndoWrist instruments and da Vinci servicing do not systematically vary across customers, omitting any parallel claim that Intuitive prices for da Vinci robots do not systematically vary across customers).

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**Figure 11: Prices of da Vinci Model X (IS4001-01) (in millions of USD)<sup>116</sup>**

88. Dr. Smith regards the relevant product as the “da Vinci Surgical System,” which, as he uses the term, includes at least both the da Vinci robot and its instruments,<sup>117</sup> and at times he suggests also includes da Vinci servicing.<sup>118</sup> Accordingly, to prove his contention that there is no price discrimination for the “da Vinci Surgical System,”<sup>119</sup> the relevant price he would have had to consider is the sum of what a robot buyer paid for the combination of the Intuitive robot and the instruments and servicing used with it. Dr. Smith cites no evidence on this, perhaps because the total Intuitive “price” for that combination of products and services varies widely by hospital.<sup>120</sup> In any event, even if the data showed little price

<sup>116</sup> IS25 Robot Prices Scatterplot v13, based on Smith Rebuttal Workpapers (“cleaned\_systems.csv”, “4.1 revenue share by system.R”, “4.2 analyze price per system”). To avoid confusion, numbers for new figures and tables start after the last figure or table number in the Initial Report.

<sup>117</sup> Smith Report ¶ 80.

<sup>118</sup> Smith Report ¶ 84.

<sup>119</sup> Smith Report ¶ 151.

<sup>120</sup> See discussion in the immediately following paragraphs.

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discrimination on instruments, price discrimination on robots would still indicate price discrimination in the combined price that Intuitive charges for what Dr. Smith calls the “da Vinci Surgical System.” The above evidence of robot price dispersion thus reverses the factual premise for Dr. Smith’s claim that a lack of price discrimination refutes market power. Indeed, as noted above, because economics textbooks indicate that price discrimination requires market power, this evidence of price discrimination affirmatively indicates that Intuitive has economic market power and is consistent with the possession of monopoly power.

89. ***Second***, even if Intuitive did charge near-uniform prices for robots, instruments, and service, Dr. Smith’s analysis ignores a key economic point from the literature on tying. That literature makes clear that even when a seller charges all customers the same price for the tying and tied product, using an inflated price for a tied product can price discriminate among buyers of the tying product when greater usage of the tying product requires more purchases of the tied product.<sup>121</sup> Such ties price discriminate because buyers who use the tying product more often make greater purchases of the price-inflated tied product, so they end up paying more, and their larger payments correlate with the fact that those who use the tying product more often generally value it more highly. In contrast, buyers who use the tying product less often purchase less of the price-inflated tied product and thus pay less. In this way, tying can effectively solve the problem of how to identify which buyers value the tying product more (they identify themselves by their usage) and of preventing resales (because the prices are all the same for all buyers). Such ties price discriminate between higher-valuing and lower-valuing buyers of the tying product, even if the firm charges all customers the same price for the tying and tied products.

90. Intuitive’s tie creates precisely that sort of price discrimination. Buyers who use da Vinci robots more often will generally purchase more instruments and more instrument repairs, as well as buy additional hourly robot service or opt for more extensive annual service plans. By tying the sale of da Vinci robots to instruments, repair, and service whose prices are inflated, Intuitive charges more to buyers who use da Vinci robots more often, thus price discriminating between higher-usage and lower-usage buyers.<sup>122</sup> Because usage correlates to how much the buyers value the

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<sup>121</sup> See EINER ELHAUGE, U.S. ANTITRUST LAW & ECONOMICS 464-466 (4th ed. 2022).

<sup>122</sup> Note that this has nothing to do with Dr. Smith’s finding that buyers whose da Vinci share of procedures is relatively high have a similar but lower per-procedure price for instruments. Smith Report ¶¶ 153-54. The share of procedures could be relatively high because a hospital has many da Vinci machines, which does not mean that its instrument usage per machine is higher. Further, a similar per-procedure price for instruments does not alter the fact that, when the price for all



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da Vinci robot, the tie thus discriminates between higher-valuing buyers and lower-valuing buyers. Because using ties to achieve such price discrimination requires market power,<sup>123</sup> the fact that Intuitive engages in such price discrimination via tying again affirmatively indicates its possession of economic market power and is consistent with monopoly power.

91. In short, Dr. Smith’s assertion that an absence of price discrimination disproves market definition (and also disproves the existence of market power and monopoly power) reflects an invalid and unreliable economic methodology for three reasons. First, his claim relies on a theoretical claim that is counter to economic textbooks. Second, his factual premise about an absence of price discrimination ignores the data showing robot price discrimination. Third, his analysis ignores the literature showing that tying can create price discrimination effects even when uniform prices are charged for the tying and tied products.

## **ii. An Absence of Price Increases Over Time Does Not Disprove My Market Definition or Intuitive’s Market Power**

92. Dr. Smith argues that a lack of price increases over time shows that a product has close substitutes that have “competitively constrained” prices and that a monopolist in that product thus lacks market power.<sup>124</sup> He then claims that because prices for da Vinci robots, EndoWrists, and da Vinci servicing have been relatively flat or declining, a separate market for da Vinci robots did not exist and Intuitive did not have any market power.<sup>125</sup>

93. Dr. Smith cites no economic literature at all for his theoretical assumption that an absence of price increases over time disproves a separate market and market power. His view conflicts with textbooks and the antitrust guidelines, which instead define markets based on whether a hypothetical monopolist could profitably raise prices above competitive levels, rather than based on whether it could continually increase prices above past levels.<sup>126</sup> His view also conflicts with economics textbooks, which define market power as the ability to raise price above marginal

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instruments is inflated, a hospital that uses its da Vinci machines more often will pay that inflated price more often, so will pay more per machine for its usage.

<sup>123</sup> See EINER ELHAUGE, U.S. ANTITRUST LAW & ECONOMICS 464-466 (4th ed. 2022).

<sup>124</sup> Smith Report ¶¶ 105, 140.

<sup>125</sup> Smith Report ¶¶ 105, 140-150. See also *id.* at pp.12-13.

<sup>126</sup> See Elhauge Report ¶¶ 64-65, 70 (summarizing the literature).

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cost, rather than as an ability to continually increase prices above past levels.<sup>127</sup> If the market power of a firm is relatively constant over time, one would expect it to charge relatively constant prices over time, absent significant changes in costs or demand. A lack of price increases over time thus does not disprove the existence of market power. Dr. Smith's contrary assumption confuses whether Intuitive had market power during the class period with whether Intuitive's market power was increasing each year.

94. The pricing data reported by Dr. Smith are entirely consistent with the existence of markets in which Intuitive had market power and monopoly power. Dr. Smith measures prices from 2014-2021 for a da Vinci robot and from 2012-2021 for da Vinci instruments and servicing.<sup>128</sup> For the da Vinci robot, Intuitive had a 100% market share in 2014 that only slightly declined to 99.5-99.6% from 2017-2021.<sup>129</sup> The relatively flat or slightly declining prices that Dr. Smith finds for da Vinci robot prices from 2014-2021 are thus perfectly consistent with Intuitive having monopoly power in the robot market during this period that was flat or slightly declining. For EndoWrist repair and replacement, Intuitive had a 100% market share in 2012 that only slightly declined to 99.87-99.99% from 2018-2021.<sup>130</sup> For da Vinci servicing, Intuitive had a 100% market share in 2012 that only slightly declined to 99.84% in 2019.<sup>131</sup> The relatively flat or slightly declining prices that Dr. Smith finds for da Vinci instrument and service prices from 2012-2021 are thus perfectly consistent with Intuitive having monopoly power in the instrument and servicing markets during this period that was flat or slightly declining.

95. Dr. Smith's argument amounts to the claim that a firm cannot have market power or monopoly power unless that power is ever-increasing over time. There is no economic basis for such a claim. To the contrary, a common economic harm from exclusionary conduct is to slow down an erosion of monopoly power that

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<sup>127</sup> See, e.g., CARLTON & PERLOFF, MODERN INDUSTRIAL ORGANIZATION 92 (3d Ed. 1999); JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 284 (1988); DON E. WALDMAN & ELIZABETH J. JENSEN, INDUSTRIAL ORGANIZATION 40, 437, 667 (2d ed. 2001); PHILLIP AREEDA & LOUIS KAPLOW, ANTITRUST ANALYSIS 556 (5th Ed. 1997). Leading articles on market power and monopoly power do likewise. See William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 939 (1981); Krattenmaker, Lande & Salop, *Monopoly Power and Market Power in Antitrust Law*, 76 GEO. L.J. 241, 247 (1987).

<sup>128</sup> Smith Report ¶¶ 141-150 & pp. A-25 to A-28.

<sup>129</sup> Elhauge Report ¶ 112 & Table 1.

<sup>130</sup> Elhauge Report ¶ 179 & Table 2.

<sup>131</sup> Elhauge Report ¶ 229 & Corrected Figure 9.



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otherwise would naturally occur.<sup>132</sup> In such situations, constant (or even declining) prices are consistent with an economically harmful maintenance of monopoly power if those prices would have declined (or declined faster) without that exclusionary conduct.<sup>133</sup> Such a maintenance of monopoly power through exclusionary conduct has economically harmful effects on the market and on buyers even if the firm initially achieved its monopoly power through desirable innovation.<sup>134</sup>

96. Dr. Smith argues that when Intuitive first sold the da Vinci robot, instruments, and service in 1998-1999, it must have faced competition from traditional surgeries that put them in the same market and meant that Intuitive pricing at that time could not have reflected market power.<sup>135</sup> Thus, Dr. Smith argues, a failure to raise prices from that initial level must mean that Intuitive also lacked market power or monopoly power during the class period.<sup>136</sup> This argument is wrong in at least two respects.

97. **First**, Dr. Smith cites no literature to support his theoretical premise that the first entrant into a new market with 100% market share cannot have market power. Nor does he provide any evidence to show what competitive conditions were like in 1998-1999, and certainly no evidence that at that time buyers found other surgical options so interchangeable with the new da Vinci robot that Intuitive could not charge a price above competitive levels. He thus provides no evidence to show that, when Intuitive launched the first MIST surgery robot in 1998-1999, it was not a separate market in which, as the only supplier at the time, Intuitive had 100% market share in. Intuitive's own consultant concluded that Intuitive was initially a startup in a "new market," indicating that the consultant believed Intuitive's 1998-99 launch of the da Vinci robot made it the only supplier in a separate market.<sup>137</sup> Accordingly, even if prices for the da Vinci robot, instruments, and service have not risen since

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<sup>132</sup> See Elhauge, *Defining Better Monopolization Standards*, 56 STANFORD LAW REVIEW 253, 337-339 (2003).

<sup>133</sup> *Id.*

<sup>134</sup> *Id.*

<sup>135</sup> Smith Report ¶¶ 105, 139. Dr. Smith puts the first da Vinci sold in 1998, based on a book chapter that has a timeline so saying. Smith Report ¶ 24 & n.43. However, Intuitive's 2000 10-K states "we recognized revenue for the first time in the second quarter of 1999 for the sale of our products" (p. 24) and reports \$0 in sales for 1998 (p. 44). Further, Dr. Smith acknowledges that Intuitive's 2000 10-K also reports that it launched the da Vinci system in 1999. Smith Report n.43. I thus consider 1998-1999 to be the years of entry.

<sup>136</sup> Smith Report ¶ 105.

<sup>137</sup> Intuitive-02068246-297 at 269, cited in Elhauge Report ¶ 96.

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1998-99, that is perfectly consistent with Intuitive having monopoly power in those markets from the time those markets were created by its entry into it in 1998-99.

98. Further, Dr. Smith believes that one can determine whether market power exists based on whether a firm price discriminates, and while he is wrong that the absence of price discrimination proves an absence of market power, economic textbooks indicate that the presence of price discrimination indicates the existence of market power.<sup>138</sup> In this case, evidence indicates that, in the produced contracts from 1998-99 (all of which are from 1999), Intuitive charged different prices to different customers for identically described da Vinci robots sold on close to the same date.<sup>139</sup> Under Dr. Smith's own approach, this evidence of price discrimination indicates Intuitive had market power in 1999, and thus rebuts this key premise for his market definition and market power analysis.

99. **Second**, Dr. Smith provides no evidence to support his premise that prices for the da Vinci robot, instruments, and service have not risen since in 1998-99. The evidence he provides, if accurate, shows only that da Vinci prices for robot consoles were relatively flat or declining since 2014 and that Intuitive instrument prices were relatively flat or declining since 2012, and that Intuitive annual service plan prices were flat or declining since 2012.<sup>140</sup> By 2012-2014, Intuitive was already a long-standing monopolist in a well-recognized market, and thus Dr. Smith's claim that as a new entrant it must have been constrained by other surgical options simply does not apply.<sup>141</sup> Nor does Dr. Smith provide any other evidence that prices for da Vinci

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<sup>138</sup> See *supra* Section II.A.1.i.

<sup>139</sup> See Intuitive-01524447, at -468 (\$900,000 in Oct. 15, 1999 Beth Israel contract); Intuitive-01291299, at -319 (\$850,000 in Oct. 20, 1999, Pitt contract); Intuitive-01529190, at -211 (\$900,000 in July 1, 1999, Ohio State contract); Intuitive-02005823, at -837 (\$850,000 in June 22, 1999, Klinikum Frankfurt contract); *see also* Intuitive-02005416, at -432 (\$850,000 in Aug. 26, 1999, Herzzentrum Munich contract); Intuitive-01293155, at -172 (\$850,000 in May 28, 1999, Herzzentrum Leipzig contract).

<sup>140</sup> Smith Report ¶¶ 141-150.

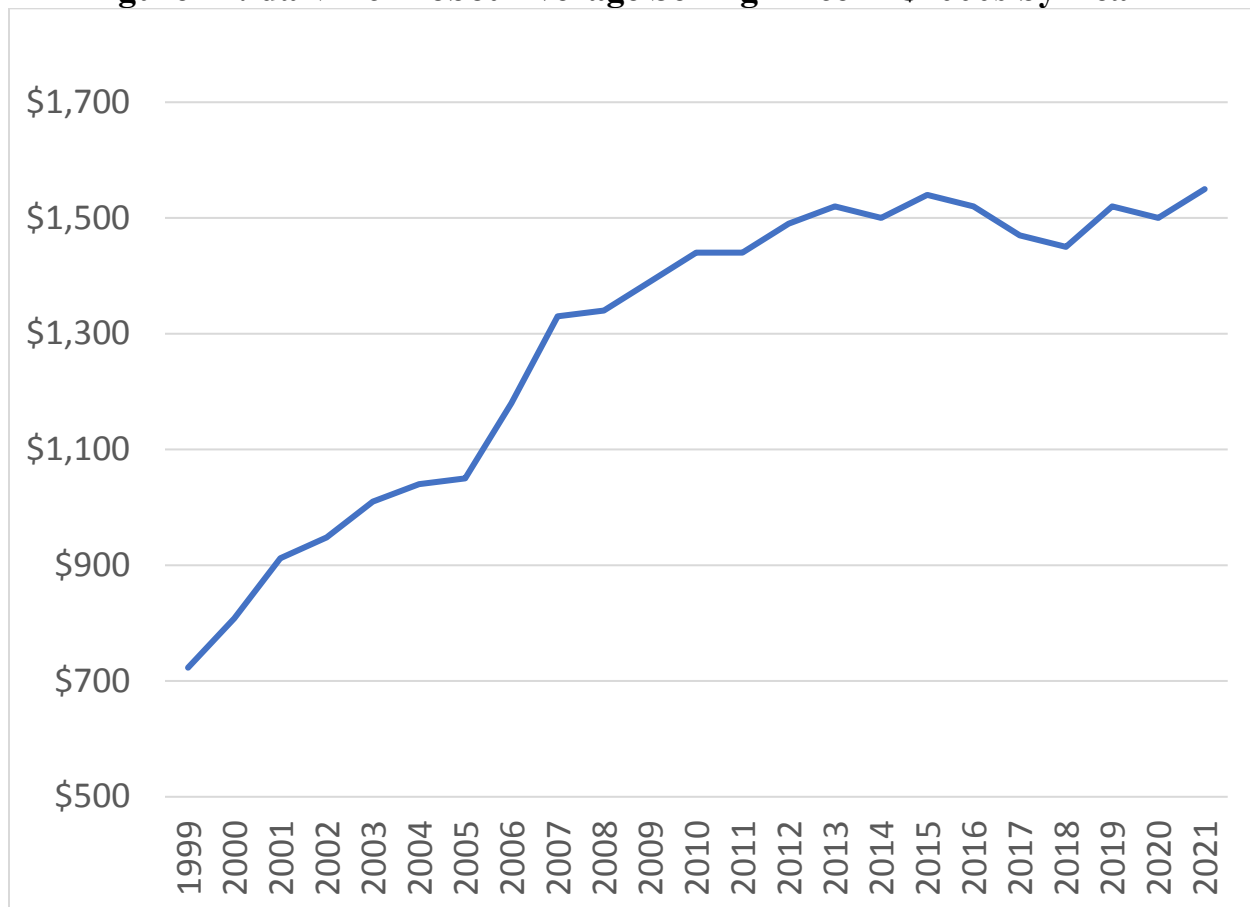
<sup>141</sup> Intuitive-02068246-297 at 269 (Intuitive's own consultant concluded that by 2016 Intuitive had grown into the "dominant supplier in a well-recognized market"); Barry A O'Reilly, *Patents running out: time to take stock of robotic surgery*, 25 INTERNATIONAL UROGYNECOLOGY JOURNAL 711, 712 (2014) ("Intuitive Surgical have been able to command such enormous costs because of its monopoly position..."); Abhishek Trehan & Tristan J Dunn, *The Robotic Surgery Monopoly is a Poor Deal*, 348 BMJ 26, 26 (January 2014) ("Intuitive Surgical can command high premiums seemingly because of its monopoly position as the sole supplier of soft tissue robotic surgical equipment: the da Vinci robot is the only system of its kind on the market."). *See also*, Elhauge Report ¶113 ("Intuitive's Bob DeSantis testified that "between 1999 and 2019" there were not

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robots, instruments, and service have not risen since in 1998-99. Indeed, in his deposition he admitted that he had no data on prices for EndoWrist instruments or da Vinci service prior to 2012.<sup>142</sup>

100. Further, Dr. Smith's position conflicts with evidence showing that Intuitive's prices did increase since its 1998-1999 entry. As the following figure illustrates, Intuitive's robot prices increased 114% from \$723,000 in 1999 to \$1.55 million in 2021.<sup>143</sup> Under Dr. Smith's own logic, the fact that the da Vinci robot prices rose this much since 1998-99 supports a conclusion that Intuitive had monopoly power.

**Figure 12: da Vinci Robot Average Selling Price in \$1000s by Year<sup>144</sup>**



“any viable alternatives to a surgeon that wanted to perform a minimally invasive soft tissue robotic surgery other than the da Vinci surgical robot.”)

<sup>142</sup> Smith (in *In re: da Vinci*) Dep. at 207-209.

<sup>143</sup> Intuitive Surgical Form 10-K FY2006 – FY2021 (“average selling price” or “average [system] revenue recognized per da Vinci system sold”).

<sup>144</sup> Intuitive ASPs from 10-Ks v2 (citing to Intuitive Surgical Form 10-K FY2000-2021). For the years 2001-2002 and 2005-2021, Intuitive's 10-Ks reported its average da Vinci robot price, so I

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101. Likewise, as the following figure shows, the price for da Vinci annual service revenue increased 44% from \$99,000 in 2003 to \$143,000 in 2009, before settling into the \$148,000-154,000 range that Dr. Smith finds from 2012-2021.<sup>145</sup> The average annual service price in the 1999 contracts was \$100,000,<sup>146</sup> indicating that the overall price increase was 54% from \$100,000 1999 to \$154,000 in 2021. Under Dr. Smith's own logic, the fact that the Intuitive's da Vinci servicing prices rose this much since 1998-99 supports a conclusion that Intuitive had monopoly power.

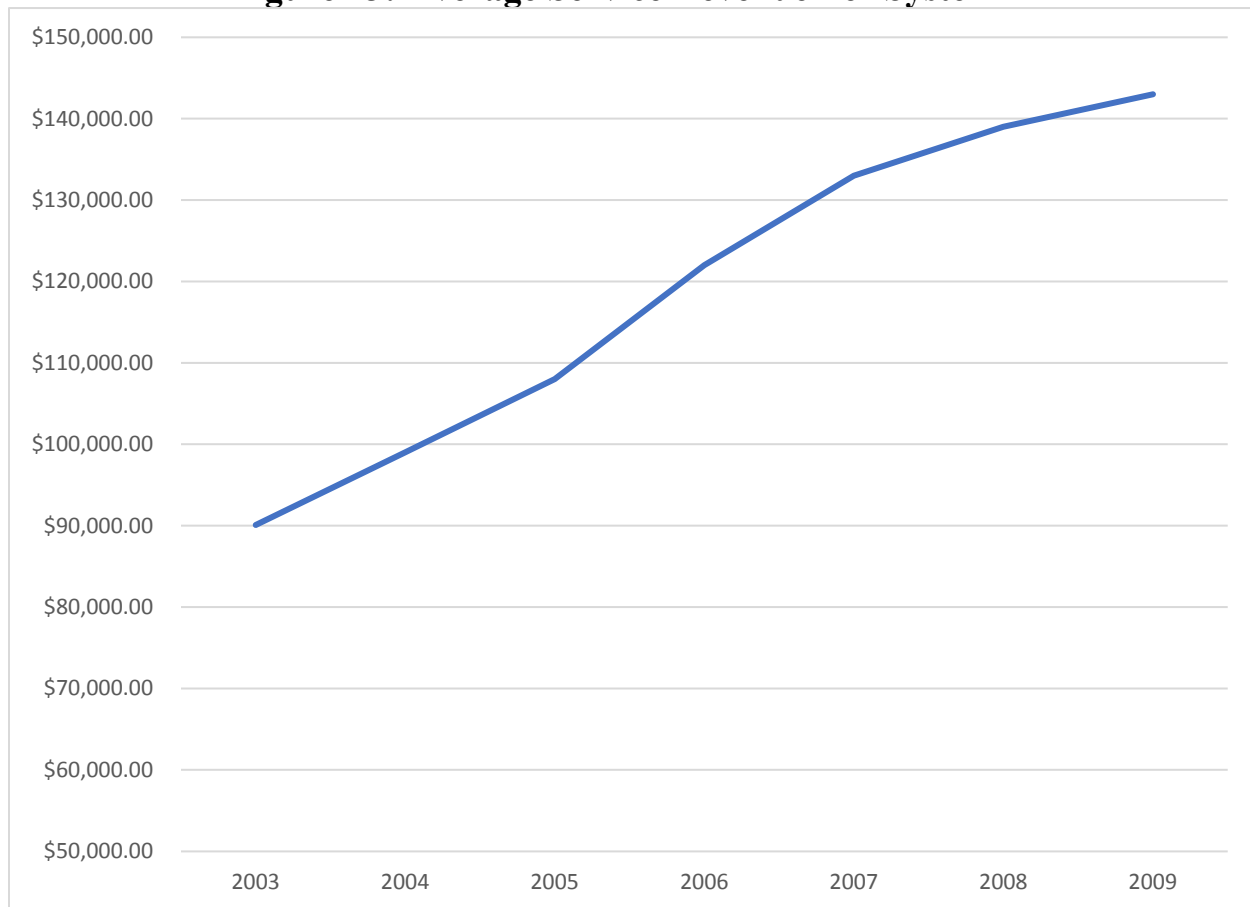
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used that figure. For the years 1999-2000 and 2003-2004, Intuitive did not report its average da Vinci robot price, so for those years I imputed that price by dividing product revenue or, if product revenue was not available, total revenue, by number of systems sold.

<sup>145</sup> See Smith Backup "Service Price Workpaper.xls" at Sheet "Figure 4."

<sup>146</sup> Intuitive-01291299, at -319 (\$100,000 in Oct. 2019 Pitt contract); Intuitive-01293155, at -172 (\$100,000 in Herzzentrum Leipzig contract); Intuitive-02005416, at -432 (\$100,000 in Herzzentrum Munich contract); Intuitive-02005823, at -837 (\$100,000 in Klinikum Frankfurt contract); Intuitive-01524447, at -468 (\$100,000 in Oct. 2019 Beth Israel contract); Intuitive-01529190, at -211 (\$100,000 in Ohio State contract).

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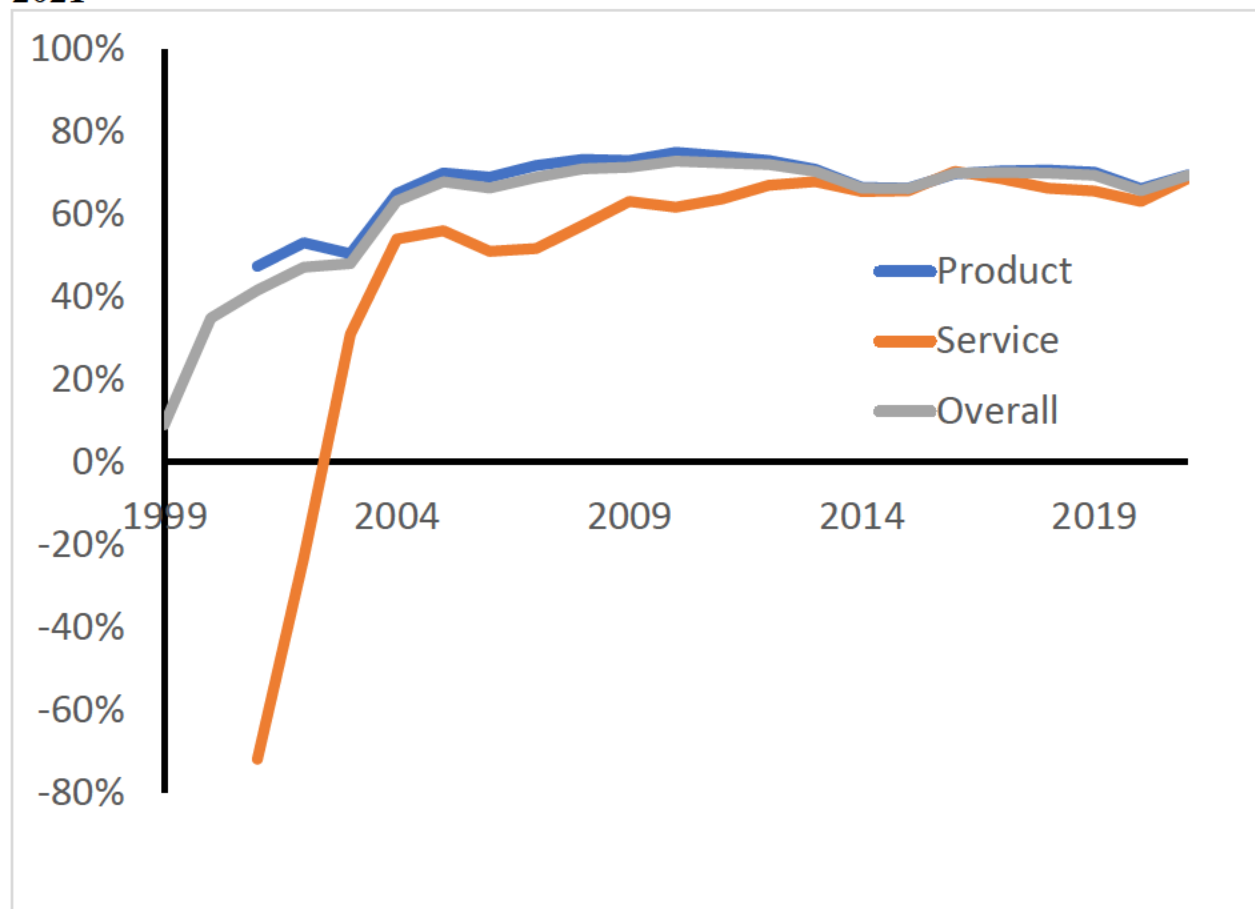
**Figure 13: Average Service Revenue Per System<sup>147</sup>**

102. Moreover, in assessing market power, profit margin matters more than raw prices, because constant pricing with declining costs would indicate increasing market power, thus satisfying even Dr. Smith’s economically invalid demand for evidence that market power was increasing over time. The data shows that Intuitive’s gross margin increased sharply from 1999 to 2021.<sup>148</sup> Intuitive’s overall profit gross margin went from 9% in 1999 to 69% in 2021. Intuitive’s product gross profit margin went from 47.4% in 2001 to 69.5% in 2021, which means that Intuitive’s product prices went from less than double its costs to more than triple its costs over this time period. Intuitive’s service gross profit margin went from -72% in 2001 to 68.6% in 2021. The following figure illustrates the results.

<sup>147</sup> Intuitive Average Service Revenue from 10-Ks v1 (citing to Intuitive Form-10K FY2004-2009).

<sup>148</sup> Although Intuitive’s contribution margin is a better measure of its Lerner Index and thus of its market power, *see* Elhauge Report ¶¶ 130, 188, 235; *infra* Section III.B.1, contribution margin data are only available starting in 2017. *See* Intuitive-00595405. Because gross profit margins include costs that contribution margins do not, gross profit margins understate Intuitive’s market power, so my use of gross margins here is conservatively biased against finding market power.

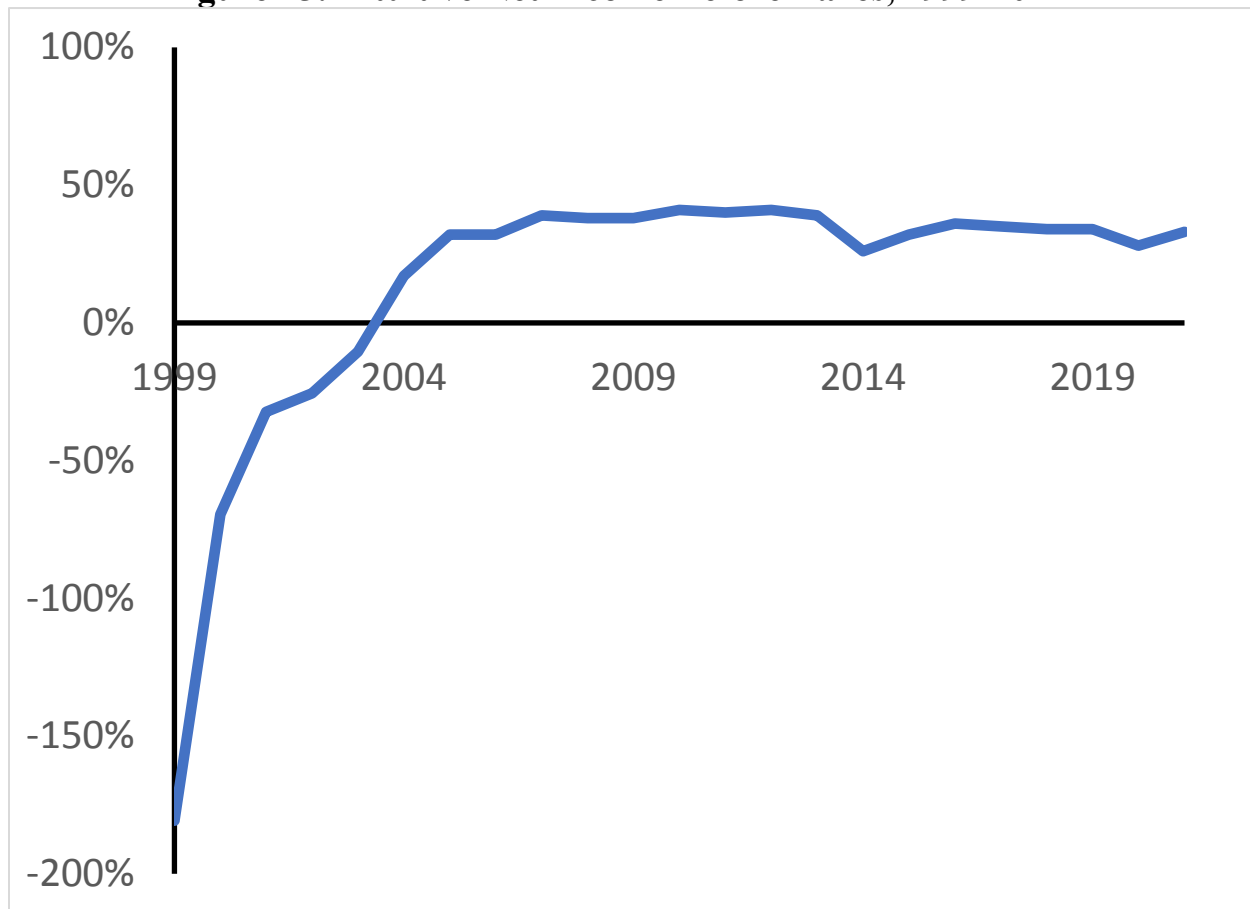
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**Figure 14: Intuitive Gross Margin for Products, Services, and Overall, 1999-2021<sup>149</sup>**

103. Likewise, the data shows that Intuitive's before-tax net income profit margin increased from -181% in 1999 to 33% in 2021. The following figure illustrates the results. Again, under Dr. Smith's own logic, the fact that the Intuitive's profit margins rose this much since 1999 supports a conclusion that Intuitive had monopoly power.

<sup>149</sup> Intuitive Profit Margins from 10-Ks v2, citing to Intuitive Surgical Form 10-K FY2002-2021. Intuitive did not report product and service margins separately prior to 2001.

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**Figure 15: Intuitive Net Income Before Taxes, 1999-2021<sup>150</sup>**

104. Accordingly, Dr. Smith relies on an invalid and unreliable economic methodology when he claims that an absence of Intuitive price increases over time proves that MIST surgery robots cannot be a relevant market and that Intuitive cannot have market power and monopoly power. His factual premise that Intuitive's prices have not increased since first offered a MIST surgery robot in 1998-99 is also baseless, and also ignores the fact that Intuitive's profit margins have increased.

### **iii. Ongoing Investments in Innovation Do Not Disprove Market Definition or Market Power**

105. Dr. Smith also relies on his claim that continued ongoing investment in innovation shows that a product has close substitutes and lacks market power.<sup>151</sup> He uses this claim to conclude that "Intuitive's significant ongoing investments . . .

<sup>150</sup> Intuitive Profit Margins from 10-Ks v2, citing to Intuitive Surgical Form 10-K FY2002-2021. Intuitive did not report product and service margins separately prior to 2001.

<sup>151</sup> Smith Report ¶¶ 134, 178.

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would be wholly unnecessary if Intuitive was not engaged in significant competition with laparoscopic and open surgery.”<sup>152</sup> He further concludes that such “continued investment is inconsistent with the behavior of a monopolist.”<sup>153</sup>

106. He cites no economic literature to support his claim that continued investment in innovation disproves separate markets and market power. Further, his claim conflicts with economics textbooks, which show that monopolists continue to have incentives to invest in innovation, although their monopoly power lowers their incentives to invest in cost-reducing innovations and makes them more likely to invest in incremental innovation, rather than in drastic innovations.<sup>154</sup> Intuitive’s continued investment in incremental improvements to its product without significant reduction in the costs of making it is thus perfectly consistent with its possession of monopoly power. Dr. Smith’s claim also conflicts with the reality that we often see monopolists, such as Standard Oil in the past or Google now, invest in innovation of their products.

107. Moreover, Dr. Smith’s claim here that continued investment in innovation indicates a lack of market power conflicts with his claim elsewhere that Intuitive’s incentives to invest in innovation depended on it preventing rival repair and service competition in order to keep its prices high.<sup>155</sup> In short, Dr. Smith elsewhere in his report claims that continued innovation investments require market power, which conflicts with his claim in this part of his report that continued innovation investments disprove market power.

108. Accordingly, Dr. Smith relies on an invalid and unreliable economic methodology when he claims that Intuitive’s continuing investments in innovation prove that MIST surgery robots cannot be a relevant market and that Intuitive cannot have market power and monopoly power. His methodology on this topic is also internally inconsistent with the methodology he uses in other parts of his report.

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<sup>152</sup> Smith Report ¶134.

<sup>153</sup> Smith Report ¶178.

<sup>154</sup> See JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 390-96 (1988); W. KIP VISCUSI, JOHN M. VERNON & JOSEPH E. HARRINGTON, JR., ECONOMICS OF REGULATION AND ANTITRUST 834-37 (2d ed. 1995); Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources to Invention*, in ESSAYS IN THE THEORY OF RISK-BEARING 144 (1971).

<sup>155</sup> See Smith Report at pp.8-9, ¶¶ 212, 214, 217-219.



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**iv. The Relevant Market Should Not Always Be Expanded to Include the Next-Closest Substitute**

109. Dr. Smith also relies on his mistaken economic claim that “relevant product markets should include a product’s closest competitors.”<sup>156</sup> He likewise states that “the relevant market to evaluate Intuitive’s competitive conduct should be built around Intuitive’s surgical solution and include its closest substitutes, which have been laparoscopy and open surgery.”<sup>157</sup>

110. Again, his assertion conflicts with basic economics, here with the economics of market definition. The standard economic method for defining markets includes the SSNIP test that is set forth in the antitrust guidelines, as Dr. Smith acknowledges.<sup>158</sup> Under that SSNIP test, a properly defined relevant product market will *always* exclude the next-closest competitor to that product. The SSNIP test starts with the smallest possible market that is potentially useful for analysis and asks whether a hypothetical monopolist in that market could profitably impose a SSNIP above competitive levels.<sup>159</sup> If a hypothetical monopolist could not, *then* one adds the next-closest competitor to the posited market and re-asks the question, and so on, until switching to substitutes outside the posited market would *not* prevent a hypothetical monopolist from profitably imposing a SSNIP, which then results in that being a relevant market. By definition, this methodology means that *every* properly defined relevant market excludes whatever remains as the next-closest competitor outside that market.

111. Dr. Smith’s misguided assertion that any relevant market must always be expanded to include the next-closest substitutes for that product thus conflicts with this what he acknowledges is the standard economic methodology for defining markets. Moreover, Dr. Smith’s flawed economic methodology would, if taken seriously, produce the absurd result that all product markets should be expanded to encompass the whole economy and all geographic markets should be expanded to

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<sup>156</sup> Smith Report at p.83, title heading §IV.D (capitalization removed).

<sup>157</sup> Smith Report ¶136.

<sup>158</sup> Dr. Smith describes the SSNIP test is a “test for market definition” that it is “well understood by economists” to be “useful as an organizing concept for market definition.” Smith Report ¶130. Although he also notes that the SSNIP test is “generally is not as straightforward to apply in monopolization cases,” that is because it might define a market *too broadly* if monopoly power is already being exercised. *Id.* This latter proposition can counsel *against* including the next-closest substitute even when the SSNIP test is failed, which further cuts against Dr. Smith’s methodology of always including the next-closest substitute.

<sup>159</sup> See DOJ/FTC Horizontal Merger Guidelines §4 (2010); Elhauge Report ¶¶ 64-65.

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encompass the entire globe. After all, even if one expanded the product market definition to include, as Dr. Smith asserts one must, traditional surgeries, then the next-closest substitute would be whatever other possible substitute treatments there might be for the given ailment, whether pharmaceutical, physical therapy, buying wheelchairs, holistic medicine, and so on, regardless of their diminishing effectiveness, because there would always be something that is the next-most effective. Further, even once one included any conceivable treatment for the ailments in question, the next-closest substitute would be whatever other things people who did not pay for a treatment would purchase to satisfy their preferences. In the end, his approach would define every product market to include anything we could buy that gives us utility, which would be the entire economy.

112. Likewise, his claim here that a relevant market should always be expanded to include the next-closest substitute is internally inconsistent with his agreement that the relevant geographic market is the U.S., rather than concluding that this geographic market must be expanded to include whatever other nation would be the next-closest substitute.<sup>160</sup> That next-closest substitute would be whatever nation people would be most likely to switch to if unable to get the product in the U.S. Further, once one included that next-closest substitute nation, there would be a new next-closest substitute nation that must also be included, and so on, until every geographic market would have to be defined as the entire world. His approach is thus not only absurd, but internally inconsistent with his admission that the geographic market is limited to the United States.

113. Accordingly, Dr. Smith's reliance on his claim that any market must be expanded to include the next-closest substitute reflects an invalid and unreliable economic methodology. He is also internally inconsistent because he uses this unreliable methodology to define the product market, but not when he defines the geographic market.

#### **v. An Overlap in End Use with Other Products Does Not Disprove My Market Definition or Disprove Market Power**

114. Dr. Smith asserts there cannot be a separate market for MIST surgery robots because buyers use MIST surgery robots, laparoscopy and open surgery for the same sorts of procedures and make choices about which to use based on their relative benefits and costs.<sup>161</sup> Once again, Dr. Smith's methodology reflects a fundamental

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<sup>160</sup> Smith Report ¶¶ 93, 120 & n.332.

<sup>161</sup> Smith Report ¶¶ 118-123.

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economic error and failure to understand the standard economic method for defining markets. The economics of market definition are summarized in the U.S. merger guidelines, which stress that properly defined markets usually “exclude some substitutes to which some customers might turn”<sup>162</sup> and “may identify a group of products as a relevant market even if customers would substitute significantly to products outside that group.”<sup>163</sup> The fact that some buyers substitute between two products does not mean that the rate of substitution in response to a price above competitive levels for one of those products is so great that it would make it unprofitable for a hypothetical monopolist to impose such an inflated price, and thus does not suffice to put those products in the same market.<sup>164</sup>

115. Moreover, Dr. Smith offers no data on the rate of substitution in response to price changes, but rather merely points to an overlap in end use because different products are used for similar procedures.<sup>165</sup> His flawed methodology would produce the absurd conclusions that (a) chicken and ice cream must be in the same market because they are both used as food and (b) cars, motorcycles, and bicycles must all be in the same market because they are all used for transportation.<sup>166</sup> Neither conclusion is valid because the overlap in end use tells us nothing about substitution in response to price increases. Consumers may use both chicken and ice cream for caloric intake, and they may use cars, motorcycles, and bicycles for transportation, but they are likely to also vary in which they prefer, or to prefer some for certain situations and others for different situations, in a way that is not much influenced by price changes. Such an overlap in end use thus need not indicate any price substitution, let alone enough price substitution to put them in the same market.<sup>167</sup>

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<sup>162</sup> DOJ/FTC Horizontal Merger Guidelines §4 (2010).

<sup>163</sup> DOJ/FTC, Horizontal Merger Guidelines §4.1.1 (2010).

<sup>164</sup> See Elhaug Report ¶¶ 63-71 (summarizing the standard economic approach to market definition).

<sup>165</sup> Smith Report ¶¶ 118-123.

<sup>166</sup> But see DOJ/FTC, Horizontal Merger Guidelines §4 Example 4 (2010) (the fact that some buyers would substitute between cars and motorcycles does not put them in the same market).

<sup>167</sup> See also ABA SECTION OF ANTITRUST LAW, MARKET DEFINITION IN ANTITRUST: THEORY AND CASE STUDIES, VIII.B.2.d.(1) (2012) (“[t]o test whether two Pharmaceuticals are reasonably interchangeable, economists do not focus solely on whether the products treat the same illness.”); ELHAUGE, U.S. ANTITRUST LAW & ECONOMICS 263 (4th ed. 2022) (“one also cannot infer a single product market from evidence that . . . there is a substantial overlap in end uses. If one could, that would lead to odd conclusions, like that bricks and wood are in the same market because both are used for construction or that televisions and radios are in the same market because both are used for entertainment. The reason one cannot infer a single market is that the existence of an overlap in end uses does not necessarily mean that the degree of buyer substitution between the items is

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116. Here, some hospitals may prefer MIST robot surgery, while others prefer traditional surgeries for any given procedure. Suppose neither set of hospitals would significantly change their usage in response to elevated MIST robot surgery prices. This necessarily means that MIST robot surgeries are a separate market. Yet the results would be perfectly consistent with the results of Smith Report Table 1, which Dr. Smith wrongly concludes indicates the lack of any separate market for MIST surgery robots.<sup>168</sup>

117. Or any given hospital could prefer MIST robot surgery for some cases involving a given medical procedure, while preferring traditional surgeries for other cases involving the same medical procedure, based on differences in physician preferences and training,<sup>169</sup> or differences in patient preferences and medical conditions or insurance coverage,<sup>170</sup> or differences in whether a surgical robot is available for a particular case.<sup>171</sup> For example, if a hospital has some physicians who can and want to do MIST robot surgeries, and other physicians who cannot or do not want to do them, then depending on the physician doing the given procedure, the hospital will use a different method. Suppose elevated MIST robot surgery prices would not affect the extent to which the hospital would continue to use MIST robot surgeries for the first set of cases and continue to use traditional surgeries for the second set of cases. This means that MIST robot surgeries are a separate market. Yet it would also mean that the hospital performs both types of surgeries for the same procedure in a way that would be perfectly consistent with results like those in Smith Report Table 2.<sup>172</sup> Yet Dr. Smith wrongly concludes that this Table indicates the lack of any separate market for MIST robot surgery robots.

118. In addition, Dr. Smith's analysis of the varying usage of da Vinci robot surgeries versus the usage of traditional surgeries over time fails to meaningfully

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high enough to restrain a monopolist in one of the items from raising prices above competitive levels.”).

<sup>168</sup> It would also be perfectly with Smith Report Table A-4.

<sup>169</sup> Some physicians want to use MIST surgery robots and are trained to do so, but others are not. See Elhauge Report ¶13, citing to Mayo Clinic, *Minimally Invasive Surgery*, <https://www.mayoclinic.org/tests-procedures/minimally-invasive-surgery/about/pac-20384771> (accessed 8/3/2022).

<sup>170</sup> Dr. Smith himself notes that usage can depend on varying insurance coverage. See Smith Report ¶¶ 119, 124.

<sup>171</sup> Elhauge Report ¶ 95 (describing doctor testimony that he might use laparoscopy rather than a robot if he cannot get access to the robot).

<sup>172</sup> It would also be perfectly with Smith Report Table A-5 and the testimony he collects in ¶ 118.

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address the asymmetric substitution over time to da Vinci surgeries from traditional surgeries.<sup>173</sup> Such one-way substitution over time is likely to continue as more and more surgeons get trained to use MIST surgery robots, which does not indicate that MIST surgery robots are viewed as economically interchangeable substitutes with traditional surgeries at a given point in time. Instead, this one-way substitution over time indicates that traditional surgeries cannot provide a significant pricing constraint because they do not threaten to steal back a significant share of procedures from robot surgeries.<sup>174</sup> Further, this one-way nature of the substitution over time confirms my conclusion that MIST surgery robots have distinctive advantages that put it in a separate market.<sup>175</sup>

119. Dr. Smith's analysis strongly confirms this one-way substitution over time to da Vinci surgeries from traditional surgeries.<sup>176</sup> However, he dismisses it on two flawed grounds. **First**, he argues that the substitution is not entirely one way because while 96% of hospitals increased the share of procedures using da Vinci surgeries, 4% of hospitals decreased that share and thus increased the share of procedures using traditional surgeries.<sup>177</sup> But that data confirms an overwhelmingly one-way direction of substitution. The fact that 4% of hospitals decreased the share of their procedures using da Vinci surgeries does not show a marketwide level of substitution likely to constrain da Vinci pricing from being at least 5% above competitive levels. Moreover, that 4% need not indicate any economic substitution from da Vinci surgeries to traditional surgeries. The 4% could reflect hospitals for which there was an increase in the sort of procedures that cannot use a da Vinci robot.<sup>178</sup> Or the 4% could reflect hospitals that lost a doctor who performed da Vinci robotic surgeries and left the hospital or that switched to using a rival MIST surgery robot.

120. **Second**, Dr. Smith dismisses the one-way substitution over time that we observe in this case because the phrase "asymmetric switching" that I used to describe it has also been used in one article to describe an entirely different phenomenon.<sup>179</sup> That article considered evidence that sometimes "Price reductions in higher quality brands attract more consumers than do price reduction in lower

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<sup>173</sup> Elhauge Report ¶¶ 91-95.

<sup>174</sup> Elhauge Report ¶ 91.

<sup>175</sup> Elhauge Report ¶¶ 74-90.

<sup>176</sup> Smith Report ¶120 & Figure 1.

<sup>177</sup> Smith Report ¶121.

<sup>178</sup> Smith Report ¶120 (noting that the da Vinci is cleared for use for only certain categories of surgery).

<sup>179</sup> Smith Report ¶ 133.



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quality brands.”<sup>180</sup> Here, we instead are dealing with a one-way substitution over time that has nothing to do with price reductions for da Vinci surgery robots, which Dr. Smith himself finds had relatively constant prices over this period,<sup>181</sup> and Dr. Smith offers no evidence that price reductions in either da Vinci surgery robots or traditional surgeries have caused any significant switching between them.<sup>182</sup>

121. Dr. Smith’s claim that an overlap in the end uses disproves market definition and the existence of market power and monopoly power accordingly reflects an invalid and unreliable economic methodology.

**vi. The Existence of Inframarginal Customers Does Not Disprove Market Definition or Market Power.**

122. Dr. Smith claims that testimony from hospitals who state that they would *not* switch to nonrobotic surgeries in response to a 5-10% price increase is not only economically irrelevant, but also affirmatively means that Intuitive must not be pricing like a monopolist.<sup>183</sup> Again, his claim demonstrates a fundamental economic confusion.

123. Under the standard economic methodology for defining markets set forth in the antitrust guidelines, the existence of some buyers who would not switch in response to SSNIP is highly relevant because if all buyers for that product would switch in response to a SSNIP, then by definition a hypothetical monopolist would not find a SSNIP profitable. Indeed, Dr. Smith’s claim that such evidence is irrelevant conflicts with the merger guidelines, which explicitly state that market definition should consider “information from buyers . . . concerning how they would respond to price changes.”<sup>184</sup> The testimony that Dr. Smith deems irrelevant is

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<sup>180</sup> *Id.* at n.356,

<sup>181</sup> Smith Report ¶141 & Figure 2.

<sup>182</sup> Dr. Smith acknowledges that the one-way substitution over time reflects the increased quality of the da Vinci robots over time, but he tries to dismiss this evidence by recharacterizing it as a drop in the “quality-adjusted” price. Smith Report ¶ 134. However, what that evidence instead indicates is that the one-way substitution over time reflected the increased attractiveness over time of da Vinci robots compared to traditional surgeries in a way that makes them increasingly more distant substitutes for each other and thus supports defining a separate market. The difference between substitution prompted by lower prices versus by increased quality is that while the former could, if strong enough, constrain price increases, the latter would not. Dr. Smith fails to offer any theory why a one-way substitution prompted by the increased attractiveness of the da Vinci robot would indicate a constraint on its pricing.

<sup>183</sup> Smith Report ¶132.

<sup>184</sup> DOJ/FTC Horizontal Merger Guidelines §4.1.3 (2010).

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highly relevant because it provides concrete examples of hospitals (i.e., buyers) who do not view open surgery or traditional laparoscopic setups as providing a close substitute to MIST surgical robots.

124. Dr. Smith dismisses this evidence on the grounds that hospitals who would not response to a SSNIP are “inframarginal” and thus are “immaterial to Intuitive’s competitive pricing decisions and provide no useful information in the assessment of the relevant markets where Intuitive competes.”<sup>185</sup> His claim is economic nonsense. Inframarginal customers are relevant to a firm’s pricing decisions precisely because they would not switch in response to a SSNIP, which is what makes it profitable to impose a SSNIP. The existence of inframarginal consumers simply indicates that the firm has a downward sloping demand curve for its own product, which is necessary for market power.

125. Dr. Smith’s claim is also internally inconsistent in its treatment of buyer switching in response to price increases. He is claiming that one should consider whether hospitals would switch in response to a SSNIP only if they would switch, but not if they would not.<sup>186</sup> This inconsistent approach would always produce a conclusion that any product market should be broadened. Moreover, his rationale for his refusal to consider contrary evidence is telling: he says that such inframarginal customers are immaterial to “Intuitive’s *competitive* pricing decisions”.<sup>187</sup> In other words, he is assuming his conclusion that Intuitive’s pricing is competitive and dismissing contrary evidence that does not materially support that conclusion. But the existence of such inframarginal customers is highly relevant to the reality that Intuitive engages in *non*competitive pricing.

126. Dr. Smith claim that the existence of such inframarginal customers affirmatively indicates Intuitive must not be pricing like a monopolist likewise reflects flawed economics. The fact that there are some customers who are inframarginal at current monopoly prices is perfectly consistent with the existence of other customers who are marginal at current monopoly prices and thus would switch in response to a further price increase above that monopoly level. Indeed, as I show, the economic literature and the merger guidelines indicates that such marginal customers always exist when monopoly power exists because a monopolist maximizes profits by raising prices until those higher prices create a sufficient set of

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<sup>185</sup> Smith Report ¶132.

<sup>186</sup> Smith Report ¶132.

<sup>187</sup> Smith Report ¶132.



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such marginal customers to make further price increases unprofitable.<sup>188</sup> Accordingly, when the current possession of market power is alleged, defeating a posited market definition requires showing that a sufficient number of customers would switch in response to a SSNIP above *competitive* price levels, not whether they would switch in response to a SSNIP above *current* levels, given that the goal is to ascertain whether current levels are inflated by market power.<sup>189</sup>

127. Accordingly, Dr. Smith relies on an invalid and unreliable economic methodology when he claims that the existence of buyers who would not switch in response to a 5-10% price increase is not only irrelevant but affirmatively indicates the absence of monopoly power.

*2. Dr. Smith’s Market Definition Analysis Ignores the Evidence that MIST Surgery Robots Have Strong Functional Advantages Over Traditional Surgery Options*

128. In my initial report, I detailed extensive evidence that MIST surgery robots have powerful functional advantages over traditional surgical technologies that mean the latter is not a close substitute for the former.<sup>190</sup> In his market definition analysis, Dr. Smith does not dispute any of my analysis.

129. To the contrary, much of Dr. Smith’s analysis affirmatively supports my conclusions about MIST surgery robots’ functional advantages. He opines that “There are several characteristics that differentiate the da Vinci Surgical System from other surgical solutions, and make it a particularly attractive substitute for many other options . . . .”<sup>191</sup> That is so, which is why the da Vinci robot has powerful functional advantages over other surgical options that mean the latter are not close substitutes.

130. However, most of Dr. Smith’s analysis ignores the implications of these functional advantages for market definition. Instead, most of his analysis seems to leap from the observation that differentiated products “can be in the same economic market” to the conclusion that the da Vinci and other surgical solutions are in the same differentiated market.<sup>192</sup> But that does not follow. When the functional differences between products is large, they are likely to put them in separate markets

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<sup>188</sup> Elhauge Report ¶70.

<sup>189</sup> Elhauge Report ¶70.

<sup>190</sup> Elhauge Report ¶¶74-95.

<sup>191</sup> Smith Report ¶ 107.

<sup>192</sup> Smith Report p.11, 13, ¶¶ 107-108.

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because they are insufficiently close substitutes for each other. Indeed, Dr. Smith at points recognizes that differentiated products are in the same product market only when substitution between them is large enough to constrain the elevation of da Vinci prices over competitive levels.<sup>193</sup> But he presents absolutely no evidence that substitution between them is large enough to have that price constraining effect. Instead, his market definition analysis depends on the six metrics that I show above are economically invalid and unreliable.

131. Dr. Smith also offers the economically flawed claim that MIST surgery robots must be in the same market as other surgical options because the demand for MIST surgery robots is derived from a more general demand for surgeries by surgeons and patients.<sup>194</sup> Although he cites economic literature on the concept of derived demand, he cites no economic literature for his premise that, when demands for two products derive from a common general demand, they must be in the same market. His argument would produce the absurd conclusion that cars, motorcycles, and bicycles must all be in the same relevant antitrust market because demand for all three derives from demand for transportation. Indeed, this argument is effectively just a repackaging of his claim that an overlap in end use means that two products must be in the same market, which is economically flawed for the reasons I discuss above in Section II.A.1.v.

132. Moreover, Dr. Smith acknowledges that my analysis *does* address the extent to which hospital demand for MIST surgery robots versus traditional surgeries reflects surgeon and patient demand for those options.<sup>195</sup> I do so at length, showing that hospitals demand MIST surgery robots to attract patients and physicians who want MIST surgery robots, as well as because MIST surgery robots can potentially reduce costs by reducing the length of stay and severity of complications.<sup>196</sup> Dr. Smith offers nothing to dispute my showing that patient and physician demand favors MIST surgery robots over traditional surgical procedures in many ways that mean this derived demand affirmatively supports putting them in separate markets.

133. Rather than substantively engaging my analysis showing that derived demand affirmatively supports defining separate markets, Dr. Smith simply dismisses it on

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<sup>193</sup> Smith Report ¶108, *id.* ¶ 133 (“This does not negate the possibility that quality-differentiated brands are in the same product market. What matters is whether there is sufficient ongoing competition for marginal consumers between products, which may or may not be consistent with observed trends in product switching.”).

<sup>194</sup> Smith Report ¶¶ 109-111.

<sup>195</sup> Smith Report ¶110.

<sup>196</sup> Elhauge Report ¶¶74-95.

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the grounds that I asserted “the market must be defined at the level of the hospitals’ purchasing decisions as hospitals, not surgeons or patients, ‘because hospitals are the actual customers.’”<sup>197</sup> He asserts that defining the market at the level of hospital purchasing must be incorrect because it is “inconsistent with Intuitive testimony and documents that clearly also consider surgeons and patients to be its customers.”<sup>198</sup> He is wrong both on the right level to define the market and on his apparent assumption that this somehow negates my showing that derived demand favors defining separate markets.

134. On the right level to define the market, the guidelines are clear that “Market definition focuses solely on demand substitution factors, i.e., on *customers’* ability and willingness to substitute away from one product to another in response to a price increase or a corresponding non-price change such as a reduction in product quality or service.”<sup>199</sup> There is no doubt here that the actual customers of Intuitive – i.e., the actual purchasers of da Vinci surgery robots – are hospitals. Dr. Smith points to no evidence that any patient or physician has ever purchased or leased a da Vinci surgery robot. He points only to evidence that hospitals have done so in the SLISA contracts. Accordingly, whether MIST surgery robots are relevant market turns on the ability and willingness of hospitals to substitute away from them in response to a price increase. To be sure, the ability and willingness of hospitals to do so will in part reflect patient and physician preferences because hospitals want to attract patients and physicians. But the actual purchase choices made in response to pricing choices will turn on how the hospitals value any benefits from attracting patients and physicians and how hospitals trade those benefits off against the costs of doing so. Thus, the fact that hospital demand in part derives from patient and physician demand does not at all conflict with the point that hospitals are the purchasers, and thus market definition turns on hospitals’ ability and willingness to substitute.

135. Not only does Dr. Smith thus use the wrong economic method to define the correct market level, his reason to do so uses an unreliable economic method. He argues that defining the market at the level of hospitals should be rejected because his client’s “testimony and documents . . . also consider surgeons and patients to be its customers.”<sup>200</sup> Whether a firm calls surgeons and patients its “customers” is irrelevant to the economic question of market definition, which turns on substitution by the actual economic purchasers, which are the hospitals. Such testimony and

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<sup>197</sup> Smith Report ¶110 (quoting Elhauge Report ¶ 72).

<sup>198</sup> Smith Report ¶110.

<sup>199</sup> DOJ/FTC Horizontal Merger Guidelines §4 (2010)(emphasis added).

<sup>200</sup> Smith Report ¶110.

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documents instead reflect a looser lay or marketing sense of the word “customers”, as actors whose preferences for the product are relevant, rather than whether they are the actual purchasers whose substitution choices affect the economic definition of markets. Moreover, on the economic market definition issue, defining the market level to simultaneously include hospitals, patients, and physicians is incoherent because it offers no method to assess how to define markets when those levels might vary in the strength of their preferences. In contrast, correctly defining the market level to be hospitals coherently takes into account that patient and physician preferences are relevant only to the extent they affect hospital substitution choices in response to prices elevated above competitive levels.

136. Even if one were to incorrectly and (incoherently) define the customers and the market level to be hospitals, patients, and physicians all at once, that offers no reason to ignore my showing that MIST surgical robots have functional advantages for all three of those groups in a way that means other surgical options are unlikely to be close substitutes. Dr. Smith’s argument that my analysis should be ignored because of his disagreement about the correct market level is thus simply a *non sequitur*, constituting a misdirection rather than a substantive response.<sup>201</sup>

### *3. Dr. Smith’s Ignores or Misinterprets Evidence that Intuitive and Other Industry Participants Did Not Treat Traditional Surgeries as Close Substitutes to MIST Robotic Surgery*

137. As I pointed out in my Initial Report, there is copious evidence that the business analysis of Intuitive and other industry participants and analysts do not treat traditional procedures as close competitors to MIST robotic surgery.<sup>202</sup> In addition to all the evidence already collected in my Initial Report, when Intuitive Chief Financial Officer Marshall Mohr was asked in 2020 about Intuitive’s margins, he stated that “[w]e are sitting at a point where **competition isn’t yet here**.”<sup>203</sup> Likewise, in September 2019, a market analyst stated that the da Vinci would not have a “legitimate competitive threat” for many years and that such a threat would require

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<sup>201</sup> Smith Report ¶110.

<sup>202</sup> Elhauge Report ¶¶ 96-101.

<sup>203</sup> Seeking Alpha, *Intuitive Surgical, Inc. (ISRG) CEO Gary Guthart Presents at Morgan Stanley 18<sup>th</sup> Annual Global Healthcare Conference Transcript*, <https://seekingalpha.com/article/4374476-intuitive-surgical-inc-isrg-ceo-gary-guthart-presents-morgan-stanley-18th-annual-global> (accessed 2/22/2023)(emphasis added).

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successful rollout of another surgery robot.<sup>204</sup> Such a statements are not rationally consistent with Intuitive or market analysts holding the view that da Vinci robots competed with traditional procedures in the same market. Dr. Smith either ignores all this evidence or dismisses it on tendentious grounds.

138. **First**, Dr. Smith simply ignores evidence for which he has no response. For example, although his report repeatedly relies on the testimony of Intuitive’s Chief Product Officer Bob DeSantis on other topics for which Dr. Smith thinks it supports his conclusions, on this topic he entirely ignores DeSantis’s testimony that “when we think about our place in the market, we should be thinking about our robotic offering versus other robotic offerings rather than lap.”<sup>205</sup> This is affirmative evidence of whether, when making business decisions, Intuitive treated the relevant market as limited to robotic offerings and treated laparoscopic surgery as competing in a separate market. Likewise, although on other topics Dr. Smith repeatedly relies on the testimony of Intuitive Senior VP Glen Vavoso, on this topic Dr. Smith ignores Mr. Vavoso’s testimony that he was unaware of Intuitive ever performing market research on buyer willingness to pay for robotic surgeries versus traditional surgeries.<sup>206</sup> A lack of such market research would be implausible if Intuitive thought that buyer switching to traditional surgeries was a pricing constraint that it needed to take into account when making business decisions. These unrebutted testimonies also provide important context for interpreting the documents that were exhibits to their depositions in a way that differs from the tendentious reading that Dr. Smith tries to give them, as discussed next.

139. **Second**, Dr. Smith dismisses contrary documents based on tendentious misinterpretations of those documents. For example, he dismisses a document that directly states, “We [Intuitive] do not see ourselves in competition with laparoscopy,”<sup>207</sup> because the document elsewhere states, Intuitive had “competitors from the beginning.”<sup>208</sup> But the context for that answer were the questions “What would you have done differently, knowing competition is coming?” and “How does

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<sup>204</sup> DeSantis Dep. Ex. 8 at Intuitive-00278204 (“we continue to have conviction that it will take multiple years for a legitimate competitive threat to [Intuitive] to materialize. Initiating a limited commercial rollout is just the first step for MDT and JNJ [potential robot surgery entrants], and many investors underestimate the time required to build out procedures, gather evidence, gain international approvals, train surgeons, etc.”).

<sup>205</sup> DeSantis (in *Rebotix*) Dep., 29:20-30:2, cited in Elhauge Report ¶97.

<sup>206</sup> Vavoso (in *Rebotix*) Dep. at 85:13-19, cited in Elhauge Report ¶100.

<sup>207</sup> Vavoso (in *Rebotix*) Dep. Ex. 9 at Intuitive-00269126, cited in Elhauge Report ¶97.

<sup>208</sup> Smith Report ¶125.



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Intuitive feel about losing its monopoly?”<sup>209</sup> That context makes clear that the discussion is about competition that they anticipated in 2017, which would have to be robotic surgery entrants rather than the traditional surgical options that had always existed. Making that even more clear was that the first full answer was, “We’ve had competitors from the beginning and have expected more entrants as robotic-assisted surgery has grown around the world.”<sup>210</sup> This makes it clear that the competitive concern was only about entry into robotic surgery. Ignoring those statements, Dr. Smith claims another sentence in the document stated that Intuitive “considers ‘the full global surgical market opportunity to provide minimally invasive surgery’ as competition.”<sup>211</sup> But the document says no such thing. Instead, the full quote states, “When you consider the full global surgical market opportunity to provide minimally invasive surgery instead of open surgery, it is no surprise that we are sitting here today with other companies that want to compete in this market.”<sup>212</sup> Thus, the document is not stating that Intuitive considers all surgical market opportunities to be in the relevant market. It is instead saying that when one considers the fact that the market for robotic surgery has the opportunity to grow to displace traditional surgeries, it is not surprising that firms have wanted to enter the market for providing MIST surgery robots. Certainly, none of those other document statements relied on by Dr. Smith undercuts the stark conclusion of that document that Intuitive is simply not in competition with traditional surgical options like laparoscopy, or the clear statements by its executives that it regarded itself as competing with other MIST surgery robots but not with traditional surgical options and did not do any market research about buyer substitution to the latter.

140. Here, and elsewhere, Dr. Smith also makes two other economic errors. (A) He mistakenly assumes that because, when Intuitive first entered the market in 1998-99, Intuitive regarded the da Vinci as competing to shift customers away from traditional surgeries, that means the two were sufficiently interchangeable as to be in the same market. That does not follow for reasons noted in Section II.A.1.ii above. (B) Even if he were right that the da Vinci robot was in the same economic market as other surgical options when Intuitive first entered the market in 1998-99, he commits an economic error by simply assuming that this means that during the **current** class period the da Vinci and traditional surgeries have been close competitors. That does not follow. Firms that create technologies that start new markets will often at first have to focus on persuading users of old technologies to

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<sup>209</sup> Vavoso (in *Rebotix*) Dep. Ex. 9 at Intuitive-00269124-25.

<sup>210</sup> Vavoso (in *Rebotix*) Dep. Ex. 9 at Intuitive-00269124.

<sup>211</sup> Smith Report ¶125, citing Vavoso (in *Rebotix*) Dep. Ex. 9 at Intuitive-00269125.

<sup>212</sup> Vavoso (in *Rebotix*) Dep. Ex. 9 at Intuitive-00269125.

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switch to the new technology in order to grow the new product market and gain sales, but once the new technology has established itself, it can be a separate market. As the ABA textbook on market definition states:

“Because markets evolve over time, market definition may change over time as well. For examples, when a new product or procedure is introduced, consumers may view it as one of several alternatives based on the information available to them at the time. At that point in time, the relevant market may be defined to encompass all competing products. Later, as more information becomes available about the benefits of the new product or procedure, it may become clear that it is substantially superior to at least some—if not all—potential substitutes. At this stage, the relevant market may be limited to the new product, excluding treatments previously regarded as reasonable alternatives.”<sup>213</sup>

141. Other evidence that Dr. Smith ignores strongly supports that understanding in this case. It shows that Intuitive’s own consultant concluded in 2016 that Intuitive was initially a startup in a “new market,” but had grown into the “dominant supplier in a well-recognized market.”<sup>214</sup> This statement clearly indicates that Intuitive understood the “market” to be robotic surgeries, rather than a broader market that included traditional surgeries, given that one could hardly think (a) that surgery in general was “new” in 1998-99 when the first da Vinci was launched,<sup>215</sup> nor (b) that that Intuitive was in 2016 the “dominant supplier” of all surgeries.<sup>216</sup>

142. Dr. Smith likewise uses tendentious interpretations to dismiss other documents that contradict his conclusion. He dismisses the fact that pages I cited showed that Intuitive’s analysis of the “[c]ompetitive [l]andscape” pointed only to other surgical robots as competitors based on his assertion that this statement was only forward-looking.<sup>217</sup> But the pages I cited indicate the contrary, and none of the document pages he cites support his claim.<sup>218</sup> Moreover, even if the only forward-looking competition that Intuitive was concerned about was from other surgical robots, that also supports defining the market as MIST surgery robots. Dr. Smith

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<sup>213</sup> American Bar Association, MARKET DEFINITION IN ANTITRUST: THEORY AND CASE STUDIES, VIII.C.2.b (2012).

<sup>214</sup> Intuitive-02068246-297 at 269, cited in Elhauge Report ¶ 96.

<sup>215</sup> Smith Report ¶ 28.

<sup>216</sup> Smith Report ¶ 24.

<sup>217</sup> Smith Report ¶ 125.

<sup>218</sup> Elhauge Report n.232 (citing DeSantis (in *Rebotix*) Dep. Ex. 6 at Intuitive-00560381-384); Smith Report n.338 (citing DeSantis (in *Rebotix*) Dep. Ex. 6 at -293, -299, -320, -367).



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also states that one of the cited pages shows that Intuitive compared the prices of two rival surgical robots with the cost per procedure for laparoscopic surgery.<sup>219</sup> However, he omits the fact that those pages only discussed rival robot surgery companies or potential entrants (not any providers of laparoscopic surgery or its instruments) and also compared the prices of those rival surgical robots to da Vinci robot pricing.<sup>220</sup> A firm in one product market might be interested in comparing the prices of its potential rivals not only to its product but also to other products because that can indicate where that potential rival is likely to target its marketing and thus to help assess the competitive threat. An interest in such data does not show that Intuitive believed that laparoscopic surgery constrained the prices of da Vinci robots down to competitive levels. Nor would market definition be negated even if there were (unlike in what Dr. Smith cites) evidence that a firm was comparing prices for its own to the prices for other products because that can help firms identify areas to target for marketing. The fact that another product has higher prices or worse quality for some given use indicates a marketing opportunity that a firm would want to exploit, but does not indicate that the other product constrains prices for that firm's product.

143. Likewise, Dr. Smith dismisses another document I cited that shows that when assessing “competitive pricing” Intuitive considered only the prices and capabilities of MIST surgery robots.<sup>221</sup> He does so based on his claim that this document also contains “multiple price comparisons with laparoscopic procedures.”<sup>222</sup> But the pages he cites contain no price comparisons between da Vinci robot and laparoscopic procedures that might indicate Intuitive viewed them as close substitutes. Instead, the document simply concludes that certain MIST surgery robot rivals or entrants were or would offer prices comparable to the price for laparoscopic surgery rather than to the price for the da Vinci.<sup>223</sup> This does not show that Intuitive viewed laparoscopic surgery as comparable to the da Vinci robot or relevant to pricing the latter. To the contrary, the document stressed that the surgery robot rivals that would price at levels comparable to laparoscopic procedures were missing many of the capabilities of the da Vinci robot and were expected to target “low acuity” procedures.<sup>224</sup> Further, the document stressed that, when setting “US Pricing” in

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<sup>219</sup> Smith Report ¶ 125 & n.339 (citing DeSantis (in *Rebotix*) Dep. Ex. 6 at -384).

<sup>220</sup> DeSantis (in *Rebotix*) Dep. Ex. 6 at Intuitive-00560384 (discussing only rival robot surgery companies or potential entrants and including a description of their price per procedure as either being a dollar amount or “\$=to lap” or “\$=to dv.”)

<sup>221</sup> Intuitive-00820368-422 at 375-377, cited in Elhauge Report ¶ 100.

<sup>222</sup> Smith Report ¶ 125 (citing Intuitive-00820368, at -375, -376, -410).

<sup>223</sup> Intuitive-00820368, at -375, -376, -410.

<sup>224</sup> Intuitive-00820368, at -377, -410.

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2019, Intuitive faced “Limited competition in the near-term.”<sup>225</sup> That would hardly be true if Intuitive deemed all traditional surgeries as close competitors for the da Vinci that constrained Intuitive to price at competitive levels.

144. **Third**, Dr. Smith ignores the fact that when Intuitive had its employees sign non-compete agreements, instead of defining competitors as being involved in traditional procedures, it defined competitors as being in “robotic assisted surgery, robotic assisted catheter control, [and] augmented reality surgery.”<sup>226</sup> This provides further direct evidence that, when making business decisions, Intuitive regarded its competitors as other surgery robots, not traditional surgical options.

145. **Fourth**, Dr. Smith also ignores or dismisses testimony from a rival maker of MIST surgery robots that it did not price in response to traditional surgeries or deem them to be in the same market. He simply ignores the testimony from the CEO of TransEnterix (a maker of Senhance, a rival surgery robot) that TransEnterix “did not monitor prices for laparoscopic towers on a regular basis” and never “respond[ed] to any changes in prices for laparoscopic towers.”<sup>227</sup> He considers, but cursorily dismisses, testimony from the same robot rival CEO that it deemed robotic surgery as “totally different” from, and “not a subset of,” laparoscopic surgery.<sup>228</sup> He dismisses this testimony on the premise that elsewhere the deposition indicated that TransEnterix regarded laparoscopic surgery as a close substitute for the Senhance surgical robot.<sup>229</sup> But that is not what the deposition pages he cites actually state. Instead, they state that TransEnterix’s CEO believed its surgical robot had functional advantages over Intuitive in addressing “the laparoscopic market” and thus continuing the one-way substitution away from laparoscopic surgery to robotic surgery.<sup>230</sup> This testimony made clear he continued to think there was a “laparoscopic market” that was “totally different” from surgical robots. Nor did anything in those deposition pages undermine the core point that this maker of surgical robots simply did not monitor laparoscopic prices or respond to them. That would hardly be the case if laparoscopic surgeries were a close price-constraining substitute for robotic surgeries.

146. **Finally**, Dr. Smith is internally inconsistent in his treatment of the perceptions of market participants. Dr. Smith concludes that robot-assisted surgery is so

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<sup>225</sup> Intuitive-00820368, at -410, cited in Elhauge Report ¶ 100 & n.238.

<sup>226</sup> Elhauge Report ¶ 98 & n.234 (quoting Vavoso (in *Rebotix*) Dep. Ex. 21 at Intuitive-00423276).

<sup>227</sup> Pope (in *Restore*) Dep. at 36:5-12., cited in Elhauge Report ¶ 100 & n.239.

<sup>228</sup> Pope (in *Restore*) Dep. at 11:6-10, 81:6-12, citing in Elhauge Report ¶ 99 & n.235.

<sup>229</sup> Smith Report ¶ 127 & n.348 (quoting Pope (in *Restore*) Dep. Tr. 76:15-77:18).

<sup>230</sup> Pope (in *Restore*) Dep. Tr. 76:15-77:18.

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comparable to open surgery and laparoscopic surgery that they should be in the same market, despite evidence that market participants (including Intuitive) deemed robot-assisted surgery to be a “revolution” from other surgical methods that put them in a different “generation,”<sup>231</sup> and that difference between laparoscopy and robotics was like the difference between a bicycle and a Tesla.<sup>232</sup> In contrast, he deems replacement EndoWrists to be so far from comparable to repaired EndoWrists that the latter were not really competitors in the same market,<sup>233</sup> even though hospitals testified that they were so similar that surgeons and other medical professionals who tried them out “couldn’t tell any difference between” them, found “no difference” in how they worked, and could not “discern any difference” between them.<sup>234</sup>

*4. Dr. Smith Ignores or Misinterprets Evidence that da Vinci Prices Were Elevated Above Competitive Levels*

147. In my initial report, I pointed to various pieces of evidence that showed that da Vinci prices were elevated above competitive levels. Dr. Smith ignores or misinterprets all this evidence.

148. **First**, I pointed out that in a June 2017 internal analysis, Intuitive concluded that entry by competing robot systems might have “[s]ome pricing impact” or that Intuitive might have “to discount to be competitive.”<sup>235</sup> If the pricing of da Vinci robots were already fully constrained by reasonably interchangeable traditional surgical options that were in the same market, there would be no reason to think that the entry of surgery robot options would lead to any distinctive pricing impact and

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<sup>231</sup> Elhauge Report ¶¶ 17, 92, 96.

<sup>232</sup> Elhauge Report ¶¶ 19, 92.

<sup>233</sup> Smith Report ¶ 231.

<sup>234</sup> Elhauge Report ¶ 157 n.388 (quoting McDonald (in *Restore*) Dep. at 13:20-17:25, 67:22-68:15 & Harrich (in *Rebotix*) Dep. at 36:14-40:2-8). *See also* Harrich (in *Rebotix*) Dep. at 38:9-13 (“Were the surgeons who used the Rebotix-repaired EndoWrists able to discern any difference between those EndoWrists and EndoWrists that had not been repaired or serviced by Rebotix? A. No.”); *Id.* at 38:16-39:39 (“Q. Were the first assists able to discern any differences between the Rebotix-repaired EndoWrists and the EndoWrists that had not been repaired or serviced by Rebotix? [ . . . ] THE WITNESS: No. Q. Were the scrub assists able to discern any difference between the Rebotix-repaired EndoWrists and EndoWrists that had not been repaired or serviced by Rebotix? [ . . . ] THE WITNESS: No.”); *Id.* at 40:2-8 (“Did you personally interview the surgeons and the technicians who were involved in the trial of the Rebotix-repaired EndoWrists? A. Yes. Q. What did you learn from those interviews? A. That the instruments still worked just like the nonrepaired ones. There was no difference.”).

<sup>235</sup> Elhauge Report ¶ 105 & n. 246 (citing Vavoso (in *Rebotix*) Dep. Ex. 16 & Vavoso (in *Rebotix*) Dep. Ex. 17 at Intuitive-00362752-753).

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discounting of the da Vinci in order to compete. This internal analysis instead indicates that Intuitive understood that its prices for its surgery robot were elevated above competitive levels and that entry by a rival surgery robot would (unlike traditional surgical options) force it to discount to competitive levels. Dr. Smith simply ignores this evidence altogether.

149. **Second**, I pointed out that several hospitals directly indicated that a further 5% increase in MIST surgery robot prices above current monopoly levels would not have caused them to substitute to nonrobotic surgeries.<sup>236</sup> As discussed above, Dr. Smith incorrectly concludes that such evidence from inframarginal customers is not only economically irrelevant, but also somehow refutes the existence of monopoly power. I explain why his analysis is economically flawed above in Section II.A.1.vi.

150. **Third**, I pointed out that the prices for MIST surgery robots were far higher (indeed, on the order of ten times higher) than the prices for similar laparoscopic setups.<sup>237</sup> As I pointed out, a willingness to pay that much higher a price for MIST surgery robots confirms all the other evidence that they must be far more valuable to hospitals than the traditional surgical options. Dr. Smith offers only two responses. First, he notes that prices can differ significantly among rivals in a differentiated market.<sup>238</sup> That can be true, but he does not point to any example where products that were properly defined to be within the same differentiated market had prices that differed by ten-fold. Second, he argues that da Vinci robots compete with traditional surgical options based on value, rather than on price.<sup>239</sup> But that simply confirms my point that the value difference is so great that traditional surgical options do not constrain the pricing of da Vinci robots down to competitive levels.

151. **Fourth**, I pointed to copious direct evidence that, with its 99.5-99.6% share of MIST surgery robot sales, Intuitive was able to exercise a market power to raise prices for the da Vinci significantly above competitive levels.<sup>240</sup> Such evidence necessarily indicates that a hypothetical monopolist with a 100% share of such sales would be able to do so as well. Dr. Smith raises various mistaken critiques of this analysis, which I rebut below in Section III.B.

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<sup>236</sup> Elhauge Report ¶ 106.

<sup>237</sup> Elhauge Report ¶ 107.

<sup>238</sup> Smith Report ¶ 126.

<sup>239</sup> Smith Report ¶ 126.

<sup>240</sup> Elhauge Report ¶¶ 112 & Table 1, 129-133.

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*5. Dr. Smith Also Mischaracterizes My Market Definition Analysis in Other Ways*

152. Dr. Smith also mischaracterizes my market definition analysis in other ways. **First**, Dr. Smith characterizes his rejection of my market definition as reflecting a conclusion that “Intuitive’s surgical solution is not effectively its own ‘market.’”<sup>241</sup> Likewise, he claims that my “analysis of Intuitive’s alleged monopoly power involves a tautological assertion that Intuitive has monopolized a market for a product that effectively only it sells.”<sup>242</sup> However, I never opined that the da Vinci robot was its own one-brand market. To the contrary, I defined a market for all MIST surgery robots, which in the U.S. included two rival brands and which would include any future entrant that offered a MIST surgery robot.<sup>243</sup> To be sure, Intuitive’s da Vinci has had a 99.5-99.6% share of that market, but that does not alter the fact that the market definition is all MIST surgery robots, not just the Intuitive one. Dr. Smith’s mischaracterization of my approach thus attacks a straw man. Likewise, I never claimed that either the market for EndoWrist repairs and replacement or the market for da Vinci servicing was a one-brand market. To the contrary, in both markets I found that Intuitive had rivals in some years.<sup>244</sup>

153. **Second**, Dr. Smith critiques my observation that that “Manual laparoscopic instruments are not a meaningful substitute for EndoWrist instruments” on the ground that that is irrelevant to whether laparoscopic surgery is a substitute for robotic surgery.<sup>245</sup> This is another straw man critique because what he quotes is not part of my analysis of whether MIST surgery robots were a separate market, so I made no claim that this point was relevant to that analysis. Instead, I first defined a separate market for MIST surgery robots on other grounds,<sup>246</sup> then showed that MIST surgery robots were a distinct product from EndoWrists,<sup>247</sup> and as I result had to then reach the issue whether EndoWrists themselves had any other economic substitutes.<sup>248</sup> It was in the section addressing the last issue that what Dr. Smith quotes appears, and on that topic the observation was highly relevant and not at all the “red herring” that he claims.<sup>249</sup> His assertion to the contrary reflects a failure to

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<sup>241</sup> Smith Report ¶106.

<sup>242</sup> Smith Report ¶137.

<sup>243</sup> Elhauge Report ¶¶ 72-112.

<sup>244</sup> Elhauge Report ¶ 179 & Table 2; Elhauge Report ¶ 229 & Corrected Figure 9.

<sup>245</sup> Smith Report ¶117 (quoting Elhauge Report ¶ 168 and claiming this is a “red herring”).

<sup>246</sup> Elhauge Report ¶¶ 72-112.

<sup>247</sup> Elhauge Report ¶¶ 140-156.

<sup>248</sup> Elhauge Report ¶¶ 166-170.

<sup>249</sup> Smith Report ¶117 (quoting Elhauge Report ¶ 168).



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understand the separate economic issues raised by these distinct market definition issues.

***B. EndoWrists, da Vinci Service, and da Vinci Robots Are Separate Products From Each Other***

154. In my initial report, I offered an extensive analysis of why MIST surgery robots are a distinct product from EndoWrist repairs, why da Vinci robots are a distinct product from their servicing, and why EndoWrist repairs are a distinct product from robot servicing.<sup>250</sup> The bulk of Dr. Smith’s analysis of whether bundled items are distinct products (as opposed to parts of a single product) is simply irrelevant to my conclusions because it consists of various arguments for why he thinks that MIST surgery robots and instruments are a single product.<sup>251</sup> Such arguments are irrelevant to my analysis because none of the anticompetitive economic harms that I found flowed from the foreclosure of new instruments, and none of my analysis rests on any assumption or conclusion that MIST surgery robots and new instruments are distinct products from each other. The foreclosure I found was rather to EndoWrist repairs and to da Vinci servicing,<sup>252</sup> and thus my inquiry instead correctly addressed the question whether they were distinct products from each other and from the da Vinci robots to which they were tied.

155. The bulk of Dr. Smith’s analysis conflates the issues by mistakenly assuming that his claimed showing that da Vinci surgery robots and their instruments are a single product somehow also means they are also a single product with EndoWrist

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<sup>250</sup> Elhauge Report ¶¶ 140-147, 196-220.

<sup>251</sup> Smith Report ¶¶ 68-95,

<sup>252</sup> Elhauge Report ¶¶ 261-331. To be sure, I observed that, without the foreclosure of EndoWrist repairs, IRCs would provide repaired EndoWrists that could substitute for new replacement EndoWrists and thus constrain pricing for the latter. Elhauge Report ¶¶ 157-165. But that does not alter the fact that the relevant foreclosure was of rival EndoWrist repairs, given that rivals could not make new EndoWrists that worked with da Vinci robots. Elhauge Report ¶¶ 41, 179; *see also id.* n.439, citing to DeSantis (in *Rebotix*) 30(b)(6) Dep. 69:8-14 (“Q [...] Another challenge might be that the da Vinci robot only works with Intuitive manufactured instruments; right? A Other than the instruments in question in this case [repaired EndoWrists], yes.”). Moreover, as I pointed out, this price-constraining effect would exist even if the da Vinci robot, EndoWrists, and replacement EndoWrists were all considered a single product because even then EndoWrist repairs would constrain prices for EndoWrists and thus constrain the combined pricing for EndoWrists and da Vince robots. Elhauge Report ¶¶ 193-194. Dr. Smith agrees that this would be plausible if Intuitive had any market power to elevate prices, but wrongly claims that this point can be ignored based on his inaccurate conclusion that Intuitive lacks any market power at all because of competition from traditional surgeries. Smith Report ¶ 128.

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repairs and da Vinci robot servicing.<sup>253</sup> The rest of his analysis does offers a few critiques of my conclusion that da Vinci robots are distinct from EndoWrist repairs or da Vinci servicing,<sup>254</sup> but I show below that those critiques are all economically flawed. In addition to focusing on the wrong products, Dr. Smith's analysis on whether bundled items are distinct products or part of a single product also suffers from many other flaws, as detailed below.

*1. Dr. Smith's Analysis of Whether Two Items Are Components of a Single Product Depends on Many Economically Invalid and Unreliable Methodologies*

**i. Items Which Are Complements Can Still Be Separate Products**

156. Dr. Smith claims that if two items are interdependent complements with each other, they must be part of a single product.<sup>255</sup> This claim by Dr. Smith has no support in antitrust economics, which has long treated as separate products such interdependent complements as hospital surgical services and anesthesiological services, cans and can-closing machines, salt and salt-injection machines, computers and computer punch cards, gas pumps and gas, shoe machines and shoe-making supplies, machine parts and service, and printers and ink. Indeed, if his claim were true, then there could never be a tie between any foremarket product and an aftermarket product because they would always be a single product incapable of being tie. While there is lively academic debate about when bundling aftermarket products to a foremarket product has adverse economic effects, the literature does not establish that they are always a single product whose bundling can never create adverse economic effects on competition.

157. Dr. Smith cites no literature that supports his contrary claim that interdependent complements are always a single product conclusion. His only literature cite on the topic is to an antitrust treatise volume that I co-authored.<sup>256</sup> But what he cites does not appear in the section of that treatise that addressed whether two items should be considered distinct products or parts of a single product, and nothing in that section indicated that interdependent complementarity suffices to

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<sup>253</sup> Smith Report ¶¶ 68-95.

<sup>254</sup> Smith Report ¶¶ 96, 98-102.

<sup>255</sup> Smith Report ¶¶ 68a, 71-72.

<sup>256</sup> Smith Report nn.202 & 205 (citing X PHILLIP E. AREEDA, HERBERT HOVENKAMP, AND EINER ELHAUGE, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION ¶ 1757b (1996).



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make two items a single product.<sup>257</sup> Instead, what he cites is in the portion of our treatise that addresses how, when two items are separate products, to determine whether they were tied together.<sup>258</sup> Indeed, the fact that this latter section addressed when interdependent complementarity itself suffices to tie two separate products together presupposes that interdependent complements *can* be separate products.<sup>259</sup> His citation to this discussion for his claim indicates he is making the fundamental error of confusing two separate economic topics: (1) whether two items are separate products capable of being tied and (2) whether the two items were tied together.

158. Moreover, the issue addressed in the portion of my treatise that he quotes is not about interdependent complementarity in general, but rather about the specific issue of whether, even when a defendant sells two items separately, they should nonetheless be deemed tied together because the defendant designed its primary product to work better with its secondary product than with rival versions of the secondary product.<sup>260</sup> That issue is largely irrelevant here because in this case it is undisputed that the defendant engages in explicit contractual tying of the da Vinci robot to EndoWrist repairs and da Vinci servicing,<sup>261</sup> so we need not reach the issue whether there is some technological interdependence that should itself be deemed to have a tying effect. It is also disputed that da Vinci robots work better with Intuitive’s EndoWrists than with repaired EndoWrists, with substantial evidence indicating that it works equally well with either.<sup>262</sup> Indeed, the fact that Intuitive thought it necessary to impose its contractual tie indicates that it did not think its complementary interdependence would suffice to prevent buyers from using rival repair and service providers.

159. Further, the conclusion my co-authors and I reached was not that such interdependence could never constitute tying; rather, our conclusion was that such interdependence should presumptively be deemed not to suffice to constitute tying,

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<sup>257</sup> See Areeda, Hovenkamp & Elhauge, *supra* note 256, at Subchapter 17D-1, ¶¶ 1741-1751 (1996). This was the Subchapter entitled “Separate Products?”.

<sup>258</sup> *Id.* at Subchapter 17D-2, ¶¶ 1752-1758. This was the Subchapter entitled “Tied Together?”.

<sup>259</sup> *Id.* at p.174 (“Even if the items are separate products, it may be unclear whether they were tied together. . . . Subchapter 17D-1 considers how to determine when bundled items constitute separate products. Subchapter 17D-2 then considers how to determine when the defendant has tied separate products together.”)

<sup>260</sup> *Id.* ¶ 1757a (“If a defendant has market power in a primary product that works better with his complementary product than with rival versions, this technological interdependence may have the “practical effect” of foreclosing rivals in the complementary market even if he sells the two products separately.”)

<sup>261</sup> See Elhauge Report ¶¶ 242-260; Smith Report ¶ 84.

<sup>262</sup> See Elhauge Report ¶¶ 380-86.

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but that presumption should be rebutted if the defendant changed the design of its primary product to make it incompatible with rival complementary products in a way that lacked any technological benefit.<sup>263</sup> What Dr. Smith quotes is just from a portion indicating where we concluded the presumption should lie,<sup>264</sup> but he misleadingly omits the fact that our text went on to say that, when that presumption was rebutted, we concluded it should constitute a “technological tie” of separate products.<sup>265</sup>

160. In my initial report, I noted that it was “not clear at this stage whether da Vinci’s use of proprietary tools to exclude some forms of rival servicing had a legitimate rationale or was a technological tie that itself imposed an anticompetitive restraint on rival competition.”<sup>266</sup> However, Dr. Smith’s report provides evidence that Intuitive has withheld access to its robots proprietary tools and specifications to make rival EndoWrist repairs and rival da Vinci servicing work worse in a way that lacks any technological benefit.<sup>267</sup> His report thus provides evidence that in addition to its contractual ties, Intuitive has engaged in technological tying that has foreclosed not only EndoWrist repairs and contestable da Vinci servicing (which were also explicitly foreclosed by its contracts), but also has foreclosed incontestable da Vinci servicing.

161. Such a technological tie would also be relevant to various claims by Dr. Smith that rest on his premise that, without tying, rivals would still lack access to these proprietary tools and specifications. He mistakenly argues that his premise not only provides a procompetitive justification for the tying, but also lowers the foreclosure share and damages calculations.<sup>268</sup> These arguments are mistaken even if the only relevant ties were the contractual ties, for reasons discussed below in Sections IV.B, VI.C, and VII.D.1. But if such an invalid technological tie also existed, these arguments are also mistaken because without that technological tie, rivals in the but-for world would have access to those proprietary tools and there would not be incontestable da Vinci servicing.

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<sup>263</sup> See Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1757.

<sup>264</sup> Smith Report nn.202 & 205.

<sup>265</sup> See Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1757.

<sup>266</sup> See Elhauge Report ¶ 225.

<sup>267</sup> Smith Report ¶¶ 15, 192b, 200a, 201, 203.

<sup>268</sup> See *id.* ¶¶ 192b, 200a, 201, 203 (mistakenly arguing that his premise provides a procompetitive justification for the tie); *id.* ¶ 234 (mistakenly asserting that the foreclosure share should exclude buyers who would have bought the same tied product in the but-for world); *id.* ¶¶ 15, 239, 257 (mistakenly arguing that damages should exclude incontestable da Vinci servicing sales and subtract the higher prices that he claims da Vinci would charge for them in the but for world).

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162. In any event, by relying on an assumption that interdependent complements can never be separate products, Dr. Smith is relying on an economically invalid methodology that lacks any support in the literature.

**ii. Alleged procompetitive justification for bundling two items does not prove they are a single product**

163. Dr. Smith claims that two items cannot be separate products if there is a procompetitive justification for tying them together, which he argues is always the case whenever the use of faulty rival components could affect the quality and reputation of the primary product.<sup>269</sup> His claim is economically flawed.

164. To begin with, his argument confuses two distinct economic issues: (1) whether two separate products have been tied together; and (2) whether, if so, that tie would be justified. If the presence of a justification sufficed to always make two items a single product, then they could never be tied, and thus one would never reach the issue of whether the tie was justified. As explained in the treatise on which Dr. Smith relies: “considering justifications . . . as part of the separate products element [a] is likely to obfuscate or confuse matters,” [b] “tends to marginalize [justifications],” [c] “rigidifies the inquiry [into an] all-or-nothing choice” that cannot consider [w]hether the substantial procompetitive justification outweighs the magnitude of the anticompetitive economic harms”; and [d] would mean “the separate-products requirement would . . . would merely replicate consideration of the substantive merits of the restraint” in a way that would destroy the screening function of asking whether separate products exist.<sup>270</sup> Instead, two items should be deemed a single product only when simple criteria indicate (without any need to directly inquire into the merits) that any bundle must be procompetitive, rather than anticompetitive, such as the competitive bundling test that applies when (as with bundling the sale of right and left shoes) the practice of bundling the items in competitive markets is so prevalent that it must indicate that their bundling is procompetitive, rather than anticompetitive.<sup>271</sup> In any event, by simply assuming that the existence of procompetitive justifications makes bundled items a single product without even addressing the above sort of issues, Dr. Smith uses an economically invalid and unreliable methodology.

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<sup>269</sup> Smith Report ¶¶ 68a, 73-74.

<sup>270</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1741b.

<sup>271</sup> *Id.* ¶¶ 1741c, 1744.

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165. Further, Dr. Smith is mistaken that the need to protect da Vinci reputation for quality is a valid procompetitive justification for Intuitive’s bundling of the da Vinci robot to the foreclosure of rival repairs and servicing, as I explained in my initial report<sup>272</sup> and address further below in Section VI.C.

**iii. Evidence that Two Items Are Bundled By Some Firms and Unbundled By Other Firms Does Not Prove They Are A Single Product**

166. Dr. Smith claims that if two items are bundled by some firms but unbundled by other firms, then that suffices to prove the two items are a single product, which he argues means that evidence that Intuitive has always bundled the da Vinci robot to its instruments in the United States, coupled with evidence that he claims shows that CMR Surgical has bundled its MIST surgery robot to its instruments in certain foreign nations, means that MIST surgery robots and their instruments must be a single product.<sup>273</sup> He rejects the significance of other evidence that shows that Intuitive has not bundled da Vinci robots with da Vinci servicing in some foreign markets and that Intuitive rivals in the United States have not bundled rival MIST surgery robots with instrument repairs or servicing.<sup>274</sup> His analysis suffers from many economic flaws.

167. Dr. Smith cites no literature that supports his claim that if two items are bundled by some firms but unbundled by other firms, then that suffices to prove the two items are a single product. The only literature he cites for his test is, once again, an antitrust treatise volume I co-authored.<sup>275</sup> But his test clearly contradicts the approach used in that book, for several reasons.

168. *First*, that book concludes, “When bundling and unbundling are both common in competitive market analogues, the items should normally be deemed separate products.”<sup>276</sup> The reason is straightforward: such competitive market practices

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<sup>272</sup> See Elhauge Report ¶¶ 380-86.

<sup>273</sup> Smith Report ¶¶ 68c-e, 79-95.

<sup>274</sup> Smith Report ¶¶ 92, 94; Elhauge Report ¶¶ 154, 207-208.

<sup>275</sup> Smith Report ¶¶ 68e, 91-92 & nn. 200, 270-71, 284-85 (citing Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744).

<sup>276</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744a, e. The treatise uses the terms “bundle” and “bundling” to mean the same thing as ties and tying conditions, with the words “bundle” and “bundling” being used not to prejudge the issue of whether the bundled items are separate products capable of being tied. See Areeda, Hovenkamp & Elhauge, *supra* note 256, at 17D introduction, pp. 174-75 (“because [this subchapter] focuses on whether various bundles of

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indicate that offering the two items unbundled can be efficient in a way that tying would prevent, so that one should not screen out any further analysis by finding a single product. Accordingly, the fact that, in competitive geographic markets, hospitals often bundle hospital services with anesthesiological services, but often unbundle them, supports a conclusion of separate products, not a single product. Even if (mistakenly) we take Dr. Smith's factual analysis to be accurate, all he has shown is that Intuitive bundled in the U.S. and CMR bundled in foreign markets, while Medrobotics and TransEnterix did not bundle in the United States and Intuitive did not bundle in certain foreign nations.<sup>277</sup> At best, this shows that both bundling and unbundling are common, which supports finding separate products, rather than (as Dr. Smith wrongly assumes) a single product.

169. **Second**, that book also concludes that bundling should be taken into account only when it occurs in competitive market analogues or by the competitive fringe in a non-competitive market, but not when bundling is used by a firm with market power.<sup>278</sup> The reason is again straightforward: bundling by a firm with market power might occur because the firm profits anticompetitively, rather than because bundling is efficient.<sup>279</sup> Ignoring the analysis of the very book he relies on, Dr. Smith mistakenly argues that Intuitive's U.S. bundling should support a single product conclusion even though Intuitive has long had monopoly power in the market for

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goods . . . constitute more than a single product, it often refers to the components of such a bundle as 'items' and the collection of such components as a product 'bundle.' This terminology makes clear that the analysis does not prejudge the question of whether the items or product bundle constitute (for antitrust tying purposes) a single product, part of a product, or two or more products. . . . We also use the more neutral term "to bundle" or "to package" to describe the connection the defendant has made between the two items or products. This terminology makes clear that we are addressing the very question whether that 'bundling' or 'packaging' should be considered an antitrust 'tie.'"). I use the terms "bundle" and "bundling" in the same way as the treatise. Dr. Smith, in contrast, elsewhere in his report expresses his understanding that "The distinction between tying and bundling is that in the case of tying the tied product is available for sale on its own, whereas bundled products always are sold together." Smith Report ¶ 184. Under that understanding of the term, Intuitive never "bundled" because it did sell EndoWrists and da Vinci servicing separately from da Vinci robots; Intuitive instead tied them together by prohibiting buyers of da Vinci robots from using rivals for EndoWrist repair or replacement or for da Vinci servicing. *See infra* Section II.B.2.i. But Dr. Smith does not seem to be using that understanding of "bundling" in this section of his analysis, given that he claims that Intuitive has always bundled.

<sup>277</sup> Smith Report ¶¶ 79-86, 88-92, 94.

<sup>278</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶¶ 1744c, 1744g.

<sup>279</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744g ("Sometimes the relevant market analogues are monopolies or oligopolies. Bundling in such a noncompetitive market carries no single product implication. Although such bundling may reflect efficiencies, it may also exploit market power or suppress competition.").



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U.S. MIST robots.<sup>280</sup> Instead, to the extent he is applying tests that reach single product conclusions based on inferences from competitive market practices, he should have excluded any bundling by Intuitive in the U.S. as reflecting noncompetitive bundling.

170. Relatedly, Dr. Smith misapplies my treatise’s test on how to determine whether bundling is sufficiently pervasive in a competitive market analogue to justify a single product conclusion. As he acknowledges, my treatise states a rule of thumb that that “if less than 10 percent of the tying item is sold unbundled in the **competitive** market analogue, then the items are a single product.”<sup>281</sup> Crucial to that rule of thumb is that the unbundling must occur in a “competitive” market analogue; the treatise expressly rejects relying on bundling by a monopolist.<sup>282</sup> But Dr. Smith misapplies this test to argue that, if less than 10% of buyers would buy repairs from Intuitive rivals in a but-for world without tying, then da Vinci robots and machines should be deemed a single product.<sup>283</sup> This is a gross misapplication of the test, for several reasons. (a) In the but-for world, there would by definition be no tying by Intuitive, so 100% of the tying product would be sold unbundled in the but-for world. Dr. Smith is conflating whether buyers might choose to buy two items from a given firm with whether the firm adopted a bundle requiring that they both be bought from that firm. (b) Although Dr. Smith suggests that in the but-for world without absolute contractual tying, Intuitive might achieve similar results using bundled pricing,<sup>284</sup> Intuitive would still have monopoly power in the but-for world, so any bundling-like policies that it might adopt in that world would not support a single product conclusion.<sup>285</sup> Rather, the test considers bundling only by a “competitive” market analogue, and the only such analogue we have in the U.S. is the “competitive fringe” formed by Intuitive’s MIST surgery robot rivals,<sup>286</sup> neither of which bundle robots with instrument repairs or robot servicing.<sup>287</sup> (c) Dr. Smith’s fails to take into account

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<sup>280</sup> Smith Report ¶¶ 68c, 79-86, 88, 91.

<sup>281</sup> Smith Report ¶ 98 (quoting Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶1744d) (emphasis added).

<sup>282</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744g.

<sup>283</sup> Smith Report ¶ 102.

<sup>284</sup> Smith Report ¶ 102.

<sup>285</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744g.

<sup>286</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744c4 (concluding that a single product conclusion could be supported by evidence that the competitive fringe within defendant’s market all bundle, unless they are engaged in oligopolistic coordination on bundling); *id.* at ¶ 1744g (concluding that if firms are engaged in oligopolistic coordination, then their bundling does not support a single product conclusion, but their unbundling does support a separate products conclusion).

<sup>287</sup> Elhauge Report ¶¶ 154, 208.

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that if Intuitive did use bundled pricing to achieve the same results as an absolute contractual tie, economics indicates that such bundled pricing should itself be deemed to constitute a tie, so such bundled pricing could not exist in the but-for world.<sup>288</sup>

171. **Third**, the treatise on which Dr. Smith relies also makes clear that *unbundling* by a monopolist should be taken into account.<sup>289</sup> The reason is again clear: unbundling by a monopolist does suggest that it is efficient to offer the items unbundled, given that such unbundling could not further any anticompetitive profit motive.<sup>290</sup> Thus, although proper application of the competitive market practices test for determining a single product should not consider Intuitive’s practice of monopolistic bundling in the U.S., it should consider Intuitive’s practice of unbundling in foreign nations,<sup>291</sup> even if Intuitive is a monopolist in those foreign nations. However, Dr. Smith does the opposite: he relies on Intuitive’s U.S. bundling, but ignores its foreign unbundling.<sup>292</sup> The reason he gives for ignoring Intuitive’s foreign unbundling is that foreign markets might be different from the U.S. market.<sup>293</sup> But that reasoning is internally inconsistent with the fact that he relies on what he deems to be rival bundling by CMR Surgical that occurred in foreign nations: indeed, such alleged foreign bundling is the only evidence of non-Intuitive bundling that he cites.<sup>294</sup> Moreover, the treatise on which Dr. Smith relies indicates that bundling practices in other geographic markets should be considered absent “compelling evidence” that differences between the markets would make bundling more efficient in one market than the other.<sup>295</sup> Dr. Smith provides no such compelling evidence, but rather simply provides a laundry list of reasons why firms might want to bundle in some markets but not others.<sup>296</sup>

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<sup>288</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1758.

<sup>289</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744g (“In contrast, unbundling in a noncompetitive market analogue implies separate products under the market practices test.”)

<sup>290</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744g (“while firms with market power sometimes have incentives to act anticompetitively rather than efficiently, offering items separately furthers no anticompetitive goal. We can thus infer that their practice of unbundling the times likely reflects efficiency.”).

<sup>291</sup> See Elhauge Report ¶¶ 200, 207 (showing that Intuitive unbundles robots and servicing in at least some foreign nations).

<sup>292</sup> Smith Report ¶¶ 68c, 79-86, 88, 92.

<sup>293</sup> Smith Report ¶ 93.

<sup>294</sup> Smith Report ¶ 90. CMR’s surgical robot is not approved for sale in the United States and has never been in clinical use in the United States. CMR-00001108-111 at -109, ¶ 4.

<sup>295</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744c1 & n.11.

<sup>296</sup> Smith Report ¶ 93.



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172. **Fourth**, the treatise on which Dr. Smith relies also makes clear that to be economically relevant to challenges to a particular bundle of item *A* to item *B*, inquiries into whether competitive market analogues bundle or unbundle must involve the same two items.<sup>297</sup> Because the challenged tie here is a contractual tie of MIST surgery robots to instrument repairs and to robot servicing, bundling by competitive market analogues supports a single market conclusion only if it involves the same sort of bundle. However, other than Intuitive’s challenged bundle in this case, the only instance of bundling that Dr. Smith claims in that, in certain foreign markets, CMR Surgical sells a surgical robot that has been designed to be compatible only with its own instruments.<sup>298</sup> Dr. Smith makes no claim that CMR engaged in any contractual bundling that required buyers of its surgical robots to buy instruments, instrument repair, or robot service from CMR. Further, CMR makes clear that it does not engage in such contractual bundling, stating that, although customers can agree to managed service contracts in which they obtain their robot and all instruments and service from CMR, customers can also buy CMR robots and instruments separately outside of such managed service contracts.<sup>299</sup>

173. In short, CMR engages in no contractual tying, but rather designs its surgical robots to be compatible only with its instruments. At most, the evidence Dr. Smith cites might suggest a possible technological tie of surgical robots to instruments.<sup>300</sup> But even that would be a tie only if there were also evidence (which Dr. Smith does not provide) that CMR changed the design of its primary product to make it incompatible with rival complementary products in a way that lacked any technological benefit.<sup>301</sup> Nor would that parallel the bundling alleged in this case, which has raised no challenge against the fact that Intuitive has designed its robot to only be compatible with its EndoWrists and thus prevented rivals from selling new EndoWrists. Moreover, even if one did deem CMR’s product design to be a technological tie, it would indicate only that CMR bundled surgical robots to its instruments, not that CMR bundled surgical robots to a prohibition on instrument repairs or robot servicing, which is the sort of bundling at issue in this case. Thus, even if one thought this CMR evidence might constitute a technological bundle that could help support a claim that robots and instruments are a single product, it would

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<sup>297</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744b-e.

<sup>298</sup> Smith Report ¶ 90.

<sup>299</sup> CMR-00001108-111 at 110-111. CMR also indicates that currently CMR is not charging customers for robot servicing, but that is because so far the nine units it has sold have been under managed service contracts that include service, *id.*, which implicitly indicates CMR would sell robot service separately to buyers who bought its robots outside of managed service contracts,

<sup>300</sup> *See supra* Section II.B.1.i.

<sup>301</sup> *See* Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1757; *supra* Section II.B.1.i.

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provide no evidence of bundling that might suggest robots are a single product either with instrument repair or robot servicing.

174. Likewise, Dr. Smith relies on the fact that in the U.S. Intuitive has always sold its robot in a way that bundled the da Vinci robot to its instruments.<sup>302</sup> Even if we put aside the fact that bundling by a monopolist is not relevant to the competitive practices test for finding a single product,<sup>303</sup> this evidence is irrelevant because it does not involve the challenged bundle of robots to instrument repairs and robot servicing. In contrast, Dr. Smith ignores Intuitive's unbundling of its robots to robot servicing, even though that is relevant because it involved the same bundle challenged here, on the internally inconsistent ground that it occurred in foreign markets.<sup>304</sup>

175. ***Fifth***, Dr. Smith discounts evidence that Intuitive's two small U.S. rivals unbundled their robots from instrument repairs or services<sup>305</sup> based on a claim that one of those rivals required one of its customers to use instruments that it had either made or approved.<sup>306</sup> But requiring an approved instrument is not the same as requiring purchases of one's own instrument, and a contract with one customer is not evidence of widespread bundling by this rival. Further, even if we put those issues aside, this evidence could at most show bundling by that rival of its robot to its instruments. That does not show any bundling by competitive rivals of robots to instrument repairs or to robot servicing, which is the relevant issue in this case.

176. In short, under the applicable competitive market practice test for inferring whether the allegedly tied items in this case are a single product, it is irrelevant that Intuitive tied them together in the U.S. market (given its monopoly power in that market) and also irrelevant that, in foreign markets, CMS Surgical designed two different items to be compatible (because that involved neither a contractual tie nor the same items that are alleged tied in this case). The only relevant market practices are that Intuitive's two unconcentrated U.S. rivals have not bundled those items and that Intuitive itself has not bundled those items in other geographic markets. The relevant market practices thus strongly support a separate products conclusion.

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<sup>302</sup> Smith Report ¶¶ 68c, 79-86, 88.

<sup>303</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744g.

<sup>304</sup> Smith Report ¶ 93. *See also* the "Third" point discussed above in this subsection.

<sup>305</sup> Elhauge Report ¶¶ 154, 207-208.

<sup>306</sup> Smith Report ¶ 94.

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**iv. A Long History of Tying Does Not Prove Two Items Are a Single Product**

177. At points, Dr. Smith relies on the even more misguided claim that evidence that Intuitive has long tied two items alone together suffices to prove they are a single product.<sup>307</sup> He again cites no literature to support that claim, which again conflicts with the treatise on which he relies, which explicitly states that bundling by a monopolist does not support treating the bundled items as a single product.<sup>308</sup>

178. Indeed, Dr. Smith's version of this principle amounts to a claim that a firm that wants to engage in anticompetitive tying can bootstrap itself into antitrust immunity simply by doing the anticompetitive tying for a long time. This claim makes no economic sense because the fact that a tie has been imposed for a long time does not mean it cannot impose economic harm, but to the contrary means it could have done so for a long time that imposes even greater economic harm.

179. Dr. Smith appears to make the following argument: (1) he believes that when Intuitive first launched the da Vinci in 1998-99, it had to be in the same market as laparoscopic and open surgery options because the da Vinci was taking away sales from other options, and thus Intuitive could not have had market power in 1998-99;<sup>309</sup> (2) he asserts that Intuitive has always bundled the relevant items since the da Vinci was launched in 1998-99;<sup>310</sup> and (3) because he assumes that Intuitive bundled in a competitive market in 1998-99, he believes that this is evidence of competitive market bundling that supports a single product conclusion.<sup>311</sup> All three of his premises are incorrect.

180. **First**, for reasons discussed above in Section II.A.1.ii, the fact that, when Intuitive first launched the da Vinci, it had to persuade hospitals to switch to the da Vinci from other surgical options does not show all those options were in the same market and that Intuitive did not have market power in a new market for MIST surgery robots, for which it was the only supplier and thus a 100% monopolist. Dr.

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<sup>307</sup> Smith Report ¶¶ 68 (“Intuitive’s surgical system should be viewed as a singular economic product for several related reasons”, including that “the da Vinci Surgical System only uses components that have been manufactured or authorized by Intuitive.”); *see also* ¶¶ 79-86, 99a (arguing that Intuitive’s long history of tying supports treating the tied items as a single product).

<sup>308</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744g.

<sup>309</sup> Dr. Smith does not state this premise in his single product analysis, but he makes such an assertion with regard to pricing changes over time. Smith Report ¶ 105.

<sup>310</sup> Smith Report ¶¶ 80, 84.

<sup>311</sup> Smith Report ¶ 88.

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Smith offers no evidence to the contrary, and his unfounded assumption reflects an economically invalid and unreliable methodology.

181. **Second**, Dr. Smith fails to provide evidence that, from the time it launched in 1998-99, Intuitive has always bundled the da Vinci robot to a prohibition on rival instrument repairs and rival da Vinci servicing. In one paragraph, he claims that “Intuitive’s historical Form 10-K filings show that Intuitive has sold an integrated system since at least 2001.”<sup>312</sup> But that does not support his claim for the following reasons:

- a) According to Dr. Smith, as that 2001 10-K defined it, the relevant “da Vinci Surgical System consists of” the robot and its “instruments.”<sup>313</sup> This definition does not include instrument repair or da Vinci servicing. Thus, even if this 10-K did state that Intuitive bundled some components of the da Vinci Surgical System in 2001, all that would mean is that it bundled the robot and instruments, which does not show it bundled either with a ban on rival instrument repairs or robot servicing, which are the challenged ties that I found caused economic harm.
- b) Although Dr. Smith quotes places where the 2001 10-K states that Intuitive sold a da Vinci Surgical System, he provides no support for his assertion that it states that Intuitive required buyers to purchase all its components from it, and I can find no support for that assertion in that 10-K.
- c) Even if this 2001 10-K showed bundling of the relevant items in this case in 2001, it provides no evidence that Intuitive bundled the relevant items when it entered in 1998-99. It thus provides no evidence that Intuitive has always used the challenged bundling from the moment of entry, which is when Dr. Smith claims it could not have had market power because its entry was new.

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<sup>312</sup> Smith Report ¶ 80.

<sup>313</sup> Smith Report ¶ 80. Specifically, he states that the “In its 2001 Form 10-K, Intuitive stated that its “*da Vinci Surgical System* consists of a surgeon’s console, a patient-side cart, a high performance vision system and [Intuitive’s] proprietary instruments.” *Id.* (emphasis in original). The first three of those items comprise the da Vinci robot. *See* Elhauge Report ¶ 25. Thus, this definition is the same as defining the “da Vinci Surgical System” to consist of the da Vinci robot and its instruments. In this regard, this definition is broader than used in Intuitive’s contracts and many documents, which define the da Vinci Surgical System to comprise only the three items that make up the da Vinci robot. *Id.*; *see also* Intuitive-01524447, at § 2.1 (1999 contract defining the “da Vinci Surgical System” to only be the three components that make up the robot, and distinct from “Accessories”); Intuitive-01291299, at § 2.1 (another 1999 contract doing the same). However, even the broader definition of the da Vinci Surgical System in the 2011 10-K does not include instrument repair or da Vinci servicing.

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182. In another paragraph, Dr. Smith asserts that Intuitive “continues to sell the system as an integrated product (including the platform, instruments, and servicing) as it had with its first system in 1998.”<sup>314</sup> For the proposition that Intuitive has always bundled the robot to instruments and servicing since 1998, the only support Dr. Smith cites are two contracts from 1999 that he says had the same key two bundling provisions as modern contracts.<sup>315</sup> However, Dr. Smith is wrong that Intuitive’s 1999 contracts had the same two key bundling provisions that he noted modern contracts have.

183. One of those bundling provisions in modern contracts provides (as Dr. Smith states) that: “Intuitive does not have an obligation to provide Services (1) on any System where installation, repair, or adjustments have been made by an individual other than an Intuitive technician or an individual approved by Intuitive.”<sup>316</sup> However, that provision is crucially different in the two 1999 contracts that he cites, which instead state that “Intuitive will not provide Services for any System in which installation, repair or adjustments have been made by an individual other than an Intuitive technician or Intuitive designee *who is not specifically trained in the application and use of the System.*”<sup>317</sup> Thus, the provision in two 1999 contracts that he cites, unlike the modern contracts, did not limit repairs or servicing by third-parties who were properly trained. Of the five other contracts from 1998-1999 that I have been able to locate in the discovery production (all of which were from 1999),<sup>318</sup> two likewise included this same italicized language, and thus they did not limit repairs or servicing by properly-trained third parties.<sup>319</sup> The remaining three 1999 contracts instead simply provided, “Intuitive will not provide Services for any System in which installation, repair or adjustments have been made by an individual who is not specifically trained in the application and use of the System.”<sup>320</sup> Those remaining three 1999 contracts thus again made clear that the provision only limited repairs or servicing by untrained persons.

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<sup>314</sup> Smith Report ¶ 84.

<sup>315</sup> Smith Report ¶ 84.

<sup>316</sup> Smith Report ¶ 84.

<sup>317</sup> See §3.2(c)(i) (emphasis added) in Intuitive-01524447, at -448 (Beth Israel contract); Intuitive-01291299, at -304 (Pitt contract).

<sup>318</sup> These seven contracts were the only contacts I was able to locate for 1998-1999. Of these seven, only two were considered by Dr. Smith. Smith Report, Exhibit B (“[156] Intuitive-01291299” and “[157] Intuitive-01524447”).

<sup>319</sup> See §3.2(c)(i) in Intuitive-01529190, at -98 (Ohio State contract); Intuitive-01293155, at -160 (Herzzentrum Leipzig contract).

<sup>320</sup> See §3.2(c)(i) Intuitive-02005416, at -421 (Herzzentrum Munich contract); §3.04 in Intuitive-02005898, at 0899 (Le Centre Hospitalier contract); §4.4(a) in Intuitive-02005823, at -829 (Klinikum Frankfurt contract).



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184. The other bundling provision in modern contracts that Dr. Smith quotes provides that buyers “will not, nor will Customer permit any third party to, modify, disassemble, reverse engineer, alter, or misuse the System or Instruments and Accessories,” and that violation of that provision would void the robot warranty.<sup>321</sup> A similar provision does appear in the two 1999 contracts that Dr. Smith cites.<sup>322</sup> But Dr. Smith omits that five other 1999 contracts did not have the same provision. Four of them instead provided only that “Purchaser will use the System only with surgical instruments and Accessories made or approved by Intuitive, and shall not modify, disassemble, alter or misuse the System.”<sup>323</sup> The provision in these other contracts thus applied only to purchaser modification of the robot, did not ban repairs of the instruments by the purchaser or third parties, and may not have banned third-party servicing of the robot.<sup>324</sup> Nor was any violation of this provision penalized by voiding the warranty in these four 1999 contracts.<sup>325</sup> The fifth 1999 contract provided only that “Purchaser agrees to use the System only with those surgical instruments or accessories that are made or approved by Intuitive.”<sup>326</sup> This fifth contract thus omits any limit on robot servicing by the purchaser, and even more clearly does not ban any instrument repairs or robot servicing by third-parties.

185. In short, of the seven contracts from 1998-1999 that I have been able to locate, five did not ban instrument repairs or robot servicing by third-parties at all, and while the other two (the two that Dr. Smith selectively cites) tied da Vinci robot sales and warranties to a ban on third-party repairs or servicing, they did not tie those bans to the provision of robot servicing by Intuitive. They thus indicate that during the time of entry Intuitive generally did *not* impose the same sorts of bundles as it imposes now. Under Dr. Smith’s premise that the market was competitive at the time of entry, his own logic would thus indicate that such unbundling by Intuitive indicates that the tied items should *not* be deemed a single product and that unbundling was

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<sup>321</sup> Smith Report ¶ 84; LARKIN-00025488, § 3.4; Elhauge Report ¶¶ 242-43.

<sup>322</sup> See §2.4(b) in Intuitive-01524447, at -453 (Beth Israel contract); Intuitive-01291299, at -300 (Pitt contract).

<sup>323</sup> See §2.4(b) in Intuitive-01529190, at -93 (Ohio State contract); Intuitive-01293155, at -156 (Herzzentrum Leipzig contract); Intuitive-02005416, at -417 (Herzzentrum Munich contract); Intuitive-02005823, at -824 (Klinikum Frankfurt contract).

<sup>324</sup> Whether it banned third party servicing of the robot appears to depend on whether a prohibition on Purchaser actions extends to third parties employed by the Purchaser.

<sup>325</sup> See §2.4(b) in Intuitive-01529190, at -93 (Ohio State contract); Intuitive-01293155, at -156 (Herzzentrum Leipzig contract); Intuitive-02005416, at -417 (Herzzentrum Munich contract); Intuitive-02005823, at -824 (Klinikum Frankfurt contract).

<sup>326</sup> See §4.01 in Intuitive-02005898, at -900 (Le Centre Hospitalier contract).



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efficient. Further, even if one thought that other evidence indicates that at the moment of entry, Intuitive was the only supplier in a new market and thus had monopoly power in it, unbundling by a monopolist likewise supports a conclusion that two items are separate products.<sup>327</sup> Thus, whether one thinks the relevant market was competitive or uncompetitive in 1999, Intuitive's unbundling at the time indicates that robots are a separate product from instrument repairs or robot servicing.

186. Dr. Smith also provides no support for his assertion that Intuitive always bundled the relevant items throughout the intervening years.<sup>328</sup> His claim conflicts with the testimony of Intuitive's 30(b)(1) and 30(b)(6) witness, who testified that in the early 2000s Intuitive trained some hospitals to do their own robot servicing.<sup>329</sup>

187. **Third**, even if Dr. Smith had proven that, at the moment of entry in 1998-1999, Intuitive bundled the relevant items and that at that time the da Vinci competed in a broader market for surgical options, that would not provide a widespread competitive market practice of bundling. The reason is that, if Dr. Smith were right about the 1998-1999 product market definition, such a market would include laparoscopic and open surgery, and Dr. Smith offers no evidence that laparoscopic capital goods were bundled with laparoscopic instruments at that time, let alone that any capital goods were bundled with accessories used in open surgery at that time. The available evidence shows to the contrary that it has long been routine to allow laparoscopic instruments to be repaired or refurbished by third-parties.<sup>330</sup> Thus, even on his incorrect hypotheses that in 1998-99 Intuitive imposed the same bundle in a competitive market that back-then included other surgical options, Dr. Smith has shown at most bundling by one of many participants in that market. That does not suffice to show the widespread bundling necessary to find a single product under the tests in the treatise that he cites.<sup>331</sup>

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<sup>327</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744g (“In contrast, unbundling in a noncompetitive market analogue implies separate products under the market practices test. . . . while firms with market power sometimes have incentives to act anticompetitively rather than efficiently, offering items separately furthers no anticompetitive goal. We can thus infer that their practice of unbundling the times likely reflects efficiency.”)

<sup>328</sup> Smith Report ¶¶ 79-80, 84.

<sup>329</sup> See Morales (in *In re: da Vinci*) 30(b)(1) Dep. 46-55; Morales (in *In re: da Vinci*) 30(b)(6) Dep. 60-62. See also Intuitive-01525946-964 at 952, section 3.4 (2005 contract giving purchaser the option to perform its own da Vinci servicing).

<sup>330</sup> Elhauge Report ¶ 155.

<sup>331</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1744a, e (“When bundling and unbundling are both common in competitive market analogues, the items should normally be deemed separate products.”).

188. *Finally*, even if Intuitive had no market power at the moment of entry and at that time imposed the same bundles as the ones challenged in this case, that would not justify concluding that those bundles are a single product. If it did, then any firm who anticipated acquiring market power could bootstrap itself into immunity for later anticompetitive tying by simply imposing the tie from the moment of entry. Even though such bundling would be inefficient, investing to cover its costs would be worth it to a firm that anticipates that future anticompetitive tying will recoup those costs and be immunized.

**v. Items Can Be Separate Products Even If They Are Useless Without Each Other or Are Both Needed to Achieve a Result**

189. Dr. Smith claims that if some of the bundled items are useless without each other or if one needs both to achieve some result, then those items should be considered part of a single integrated product, which he argues means that the da Vinci robot and its instruments must be deemed a single product.<sup>332</sup>

190. Once again, Dr. Smith’s approach conflicts with standard antitrust economics, which (for example) treats hospital surgical services and anesthesiological services as separate products even though they are useless without the other and one needs both to have a successful surgery. Likewise, antitrust economics deems cans and can-closing machines, salt and salt-injection machines, computers and computer punch cards, gas pumps and gas, shoe machines and shoe-making supplies, machine parts and service, and printers and ink to be separate products though in each tandem at least one product is useless without the other and one needs both to achieve a desired result.

191. Also once again, Dr. Smith cites no literature that supports the standard that he applies, and his approach conflicts with the treatise that he relies on for other claims in his single product analysis. That treatise rejects both the “useless without” test and the “needs both” test that he applies.<sup>333</sup> The reason is straightforward: adverse economic effects can flow from a tie even when the tied product is useless

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<sup>332</sup> Smith Report ¶¶ 68b, 75-78. He also suggests in these paragraphs that it suffices that Intuitive designed those products to work with each other, but that is simply another way of stating the interdependent complements argument that I already rebutted above in Section II.B.1.i.

<sup>333</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1751a.

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without the tying product or when one needs both to achieve some result.<sup>334</sup> Moreover, the more useless a tied product is without the tying product, or the more one needs the tying product to make the tied product useful, the more likely that the tie can create a tied product monopoly and substantial foreclosing effects.<sup>335</sup>

**vi. Items Are Not a Single Product Simply Because They Are Contractually Tied**

192. In his deposition, Dr. Smith made clear that he was assuming that if a firm sells multiple items in a single contract, that makes those items a single product. He testified:

Q. How do you define the term "integrated system" right there?

A. They contract for the sale of all of these components of the da Vinci Surgical System at the same time under the SLSA. . . .

Q. Are all integrated system by definition singular products?

A. I think the meaning in this sentence is that they're selling it as a system, all the components together, integrated. So, yes, I think by the way I'm using it here, that would be true.<sup>336</sup>

In his report, Dr. Smith likewise suggests that he regards contracting to sell multiple items enough to make those items an integrated single product.<sup>337</sup>

193. Dr. Smith cites no literature to support his flawed assumption that contracting to sell two items only together suffices to make them a single product. His approach literally is the same as an assumption that contractual tying can never exist, because if two items are bundled in a contract they would (under his assumption) become a single product incapable of being tied. This conflicts with the economic literature, which finds that contractually bundling two items can sometimes constitute a tie that creates anticompetitive economic harm.<sup>338</sup>

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<sup>334</sup> *Id.*; EINER ELHAUGE, U.S. ANTITRUST LAW & ECONOMICS 464-466, 467-72, 492 (4th ed. 2022) (detailing some of the adverse economic harms that can flow even when the products are useless without each other or when one needs both to achieve some result).

<sup>335</sup> Areeda, Hovenkamp & Elhaug, *supra* note 256, at ¶ 1751a.

<sup>336</sup> *See also* Smith (in *In re: Da Vinci*) Dep. at 83-84.

<sup>337</sup> Smith Report ¶ 34 (“Since the launch of the first da Vinci Surgical System, Intuitive has been presenting and selling the da Vinci Surgical System as an integrated system”); *id.* ¶ 84 (“the company continues to sell the system as an integrated product (including the platform, instruments, and servicing)” by bundling them in its SLSAs).

<sup>338</sup> *See* EINER ELHAUGE, U.S. ANTITRUST LAW & ECONOMICS 464-472s (4th ed. 2022).

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*2. Dr. Smith Is Wrong that Unbundling the Allegedly Tied Items Was Not Feasible and Desirable to Some Buyers*

194. As stated in the antitrust treatise on which Dr. Smith relies, a threshold requirement for deeming two bundled items to be separate products from each other is “(1) that *some* customers actually want the items separated and (2) that separating them is physically and economically possible.”<sup>339</sup> If those two threshold findings are met, then the items should be deemed separate products unless a single product rationale applies, such as a showing of sufficiently uniform bundling in competitive market analogues.<sup>340</sup> I already rebutted in the previous section Dr. Smith’s claim that near-uniform bundling of the relevant items has been established in any competitive market analogue. Here I address Dr. Smith’s attempts to dispute my threshold findings that unbundling was feasible and desirable to some buyers.

**i. It Is Feasible to Unbundle the Products and Services at Issue in This Case**

195. Regarding the feasibility of unbundling the products and services at issue in this case, the question is (as the test above states) whether separating the bundled items “is physically and economically possible.”<sup>341</sup> Dr. Smith does not engage in any feasibility analysis, but rather simply baldly asserts that Sections III.A-C of his report show unbundling was unfeasible.<sup>342</sup> However, nothing in those sections shows that unbundling was not feasible. Instead, those sections simply argue (mistakenly) that there are procompetitive justifications for tying da Vinci robots to other components and that Intuitive has always done so,<sup>343</sup> neither of which shows that unbundling was not “physically and economically possible.”<sup>344</sup>

196. Further, there is affirmative evidence that unbundling is physically and economically possible. In his report, Dr. Smith claimed to be “aware of no evidence that Intuitive ever separately sold the components of a da Vinci Surgical System,” which as he defines it, “consists of” the robot and its “instruments.”<sup>345</sup> However,

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<sup>339</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1743 (emphasis in original).

<sup>340</sup> *Id.*

<sup>341</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1743.

<sup>342</sup> Smith Report ¶¶ 96-97.

<sup>343</sup> Smith Report ¶¶ 68-86.

<sup>344</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1743.

<sup>345</sup> Smith Report ¶ 80. Specifically, he states that the “da Vinci Surgical System consists of a surgeon’s console, a patient-side cart, a high performance vision system and [Intuitive’s] proprietary instruments.” *Id.* The first three of those items comprise the da Vinci robot. *See* Elhauge Report ¶ 25. Thus, Dr. Smith’s definition is the same as defining the “da Vinci Surgical

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Intuitive’s own sales database clearly shows that it sells the da Vinci robot separately from its EndoWrist instruments.<sup>346</sup> Further, Intuitive’s own General Manager agreed that EndoWrists are purchased separately from da Vinci surgical robots.<sup>347</sup> Indeed, Intuitive’s da Vinci robot sales contracts all expressly provide that instruments have to be purchased “pursuant to *separate* orders”.<sup>348</sup> Intuitive’s contracts also provide for separate pricing and delivery of robots and instruments.<sup>349</sup> Indeed, in his deposition, Dr. Smith admitted that that it was possible to unbundle the da Vinci robot from EndoWrist instruments.<sup>350</sup>

197. Moreover, the relevant tie here is not just of the da Vinci robot to EndoWrist instruments. Rather, the relevant ties are of the da Vinci robot to the sale of robot servicing, EndoWrist repairs, and repaired EndoWrists. EndoWrist repairs are clearly sold separately from da Vinci robots. Indeed, because Intuitive sells no EndoWrist repairs, they are provided exclusively by Intuitive’s rivals, and because those rivals cannot make the da Vinci robot, those robots are supplied exclusively by Intuitive.<sup>351</sup> Thus, the da Vinci robot and EndoWrist repairs are *always* sold separately, and indeed always sold by separate firms. Thus, it is clear that separate sales are physically and economically possible.

198. Likewise, da Vinci servicing is clearly sold separately from da Vinci robots. Intuitive’s own sales database clearly shows that it sells the da Vinci robot separately from its robot servicing.<sup>352</sup> U.S. customers understand that da Vinci robots and

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System” to consist of the da Vinci robot and its instruments. In this regard, Dr. Smith’s definition is broader than used in Intuitive’s contracts and many documents, which define the da Vinci Surgical System to comprise only the three items that make up the da Vinci robot. *Id.*; see also Intuitive-01524447, at § 2.1 (1999 contract defining the “da Vinci Surgical System” to only be the three components that make up the robot, and distinct from “Accessories”); Intuitive-01291299, at § 2.1 (another 1999 contract doing the same). However, even Dr. Smith’s definition of the da Vinci Surgical System does not include instrument repair or da Vinci servicing.

<sup>346</sup> Elhauge Report ¶¶ 141, 145 (citing Intuitive Robot Transactions Data and Intuitive Instrument and Accessory Transactions Data).

<sup>347</sup> Elhauge Report ¶¶ 141, 145.

<sup>348</sup> Elhauge Report ¶ 145.

<sup>349</sup> Intuitive-01846020, at § 2.3, 2.6, 3.1-3.2, 8, 9.1.

<sup>350</sup> Smith (in *In re: da Vinci*) Dep. at 122:16-21 (“Q. And that – by that you mean that the EndoWrists could be sold separately from the da Vinci robot; correct? A. I think my opinion is that it’s not economically efficient to do so, but I don’t dispute that they could be sold that way.”).

<sup>351</sup> Elhauge Report ¶¶ 141, 145.

<sup>352</sup> Elhauge Report ¶¶ 197, 201 (citing Intuitive Robot Transactions Data and Intuitive Service Contract Data).

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servicing “are separate products available for purchase.”<sup>353</sup> Further, Intuitive’s 30(b)(6) witness testified that Intuitive itself does not tie da Vinci robots to servicing in at least some foreign markets and trained some hospitals to do their own da Vinci servicing.<sup>354</sup> Also demonstrating feasibility is the fact that Intuitive’s U.S. rivals have unbundled MIST surgery robots from their servicing.<sup>355</sup>

199. As the treatise on which Dr. Smith relies states, feasibility can be established by showing “that some firms, at some time, in some area, sold the products separately.”<sup>356</sup> Here, we have evidence not only that Intuitive’s rivals have successfully sold the relevant products separately in the U.S. market, but that Intuitive itself has done so in foreign markets.

**ii. Unbundling of the Products and Services at Issue in This Case Is Desirable to at Least Some Buyers**

200. Regarding the desirability of unbundling the products and services in this case, the question is whether “*some* customers actually want the items separated.”<sup>357</sup> That is clearly true in this case. After all, the evidence shows that despite “Intuitive’s prohibitions, many hospitals did opt to purchase EndoWrist repair services from third-party IRCs instead of buying new replacement EndoWrists from Intuitive” and “Many other hospitals indicated their interest in purchasing EndoWrist repair from Intuitive’s rivals if they had been given the choice.”<sup>358</sup> Likewise, the evidence shows that despite “Intuitive’s prohibitions on doing so, many hospitals had or would have opted to purchase da Vinci servicing from third party IRCs instead of buying it from Intuitive.”<sup>359</sup> The evidence further shows that Intuitive itself unbundled its robot from its servicing in at least some foreign nations, which it have no incentive to do if no buyers desired to buy service separately from robots.<sup>360</sup>

201. As the treatise on which Dr. Smith relies states, this element can be established by showing “that some buyers, at some time, in some area, bought the items separately.”<sup>361</sup> Here, we have evidence not only that Intuitive’s rivals have

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<sup>353</sup> Elhauge Report ¶¶ 197, 201.

<sup>354</sup> Elhauge Report ¶¶ 200, 207.

<sup>355</sup> Elhauge Report ¶208.

<sup>356</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1743b.

<sup>357</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1743 (emphasis in original).

<sup>358</sup> Elhauge Report ¶¶ 149-151 (collecting supporting evidence for these propositions).

<sup>359</sup> Elhauge Report ¶¶ 204.

<sup>360</sup> Elhauge Report ¶¶ 200, 207.

<sup>361</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1743a.



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successfully sold the relevant products separately in the U.S. market, but that Intuitive itself has done so in foreign markets.

202. Further, in this case, Intuitive imposed contractual ties forbidding hospitals from using third-party EndoWrist repairs or da Vinci servicing and issued warnings and threats to stop hospitals from doing so.<sup>362</sup> Intuitive would have no incentive to do so if no hospitals had any desire to buy repairs or servicing from a separate provider.

203. Dr. Smith never rebuts any of the above evidence. Instead, he relies on various *non sequiturs*. **First**, he claims that desirability to some buyers cannot be established because he argues that Intuitive would use price bundling in the but-for world that would likely mean that less than 10% of buyers would purchase repairs separately.<sup>363</sup> As detailed above in II.B.1.iii, his analysis reflects a gross misapplication of the cited treatise’s test on how prevalent bundling has to be a competitive market analogue to support a single product conclusion. But an additional problem is that this 10% test for assessing bundling in competitive market analogues is nowhere part of the test for determining whether the threshold desirability to some buyers has been established.<sup>364</sup> The threshold desirability test simply asks whether “some” buyers want the items separated. Clearly that test is met.

204. Moreover, even if one were to wrongly apply a 10% test here, whether 10% of buyers would want the items separately is hardly disproven by Dr. Smith’s claim that in the but-for world Intuitive would use bundled pricing to force buyers to take them together.<sup>365</sup> To the contrary, his claim that Intuitive would do so itself indicates enough buyers want to buy the products separately that Intuitive would want to restrain that choice. More telling are the facts that: (a) in typical medical device markets (which presumably often lack similar ties) 25% of repair and service is purchased from third-parties; (b) in the laparoscopic market that Dr. Smith himself

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<sup>362</sup> Elhauge Report ¶¶ 152, 205.

<sup>363</sup> Smith Report ¶¶ 98, 102.

<sup>364</sup> Areeda, Hovenkamp & Elhauge, *supra* note 256, at ¶ 1743a (analyzing this threshold inquiry without ever including such a 10% test). Likewise, nothing in that section says the desirability threshold cannot be met by showing that “some idiosyncratic buyers” prefer the items separately. *Id.* Rather, that language comes in the section on analyzing whether bundling in competitive market analogues is sufficiently uniform to support a single product conclusions. *Id.* at ¶ 1744d. Dr. Smith is thus mistaken to cite this language in Smith Report ¶ 98 n.284 as applicable to his claim that the threshold of showing desirability to some buyers has not been met.

<sup>365</sup> Smith Report ¶ 102.

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argues is a competitor, instruments are typically repaired by third-parties and 57% of instruments are refurbished; and (c) the “majority” of buyers contacted by an Intuitive rival indicated an interest in rival da Vinci servicing.<sup>366</sup>

205. **Second**, Dr. Smith contends that the desirability of unbundled purchases to some buyers cannot be established because Intuitive has always tied “the components of the da Vinci Surgical System.”<sup>367</sup> This contention is economically flawed in several ways. (a) Given that Dr. Smith defines a da Vinci Surgical System to consist of the robot and its instruments,<sup>368</sup> any bundling of it is irrelevant to challenged ties of the robot to instrument repairs or robot servicing. (b) The fact that Intuitive has long felt it necessary to tie its robot to instrument repairs or robot servicing hardly shows that there are not some buyers who want to buy them separately. Indeed, it cuts the other way because Intuitive would have no economic incentive to impose and enforce ties banning the purchase of instrument repairs or robot servicing from third-parties unless some buyers desired to make such purchases. (c) His approach produces the absurd result that if a firm successfully imposes a highly effective tie that forecloses all rival competition, that complete foreclosure would itself make the tie a single product whose anticompetitive economic effects could not be considered.

206. **Third**, Dr. Smith argues that evidence indicates that many hospitals and surgeons would be reluctant to use repaired EndoWrists because some hospital witnesses testified that their hospitals did not purchase equipment that required 510(k) clearance and did not obtain it.<sup>369</sup> However, Dr. Smith never responds to the evidence indicating that EndoWrist repairs and use-extension did not require a 510(k) clearance, including analysis by Intuitive, rivals, and industry analysts concluding that such clearance was not required.<sup>370</sup> Nor does he address evidence that both Intuitive and rivals in fact sold EndoWrist repairs or repaired EndoWrists before obtaining any 510(k) clearance and that third party rivals either received 510(k) clearance or could have in the but-for world.<sup>371</sup> All this evidence conflicts with any claim that a need for 510(k) clearance meant that there were not at least some buyers who wanted to buy EndoWrist repairs from a third party. Moreover, neither Dr. Smith nor any other defense expert contends that any need for 510(k) clearance would apply to rival providers of da Vinci servicing, and defense expert

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<sup>366</sup> Elhauge Report ¶¶ 155-156, 204, 209.

<sup>367</sup> Smith Report ¶ 99a.

<sup>368</sup> Smith Report ¶ 80; *supra* II.B.1.iv.

<sup>369</sup> Smith Report ¶ 99b.

<sup>370</sup> Elhauge Report ¶¶ 59-60, 283-284, 292; Trautman Report ¶¶ 19, 29-31, 35, 68-70, 82-83.

<sup>371</sup> Elhauge Report ¶¶ 285-289, 292.

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Prof. Goodwin affirmatively agrees with me and plaintiff expert Kimberly Trautman that servicing does not require 510(k) clearance.<sup>372</sup> Accordingly, any evidence about buyer desire for 510(k) clearance cannot show that the threshold of desirability to some buyers is not shown for the unbundling of da Vinci robots from da Vinci servicing.

207. **Fourth**, Dr. Smith dismisses the above-noted evidence that many hospitals did in fact buy EndoWrist repairs from rivals and that Intuitive must have thought hospitals wanted to do so because it imposed and enforced ties to prevent this; he dismissed such evidence on the grounds that their desire to do so reflected an insufficient concern for patient safety that the tying procompetitively restrained.<sup>373</sup> I show below in Section VI.C that this alleged procompetitive justification is ill-founded. But regardless of whether it is valid, it does not undermine the desire of some hospitals to purchase the products unbundled, which is the issue relevant to this part of the separate products inquiry. Dr. Smith's contrary assumption once again indicates his failure to understand the economic distinction between whether two items are separate products capable of being tied and whether, if they are, a tie of them is justified.<sup>374</sup> Nor does this response of his provide any evidence to rebut the conclusion that some buyers wanted to buy da Vinci robots and servicing separately.

208. **Fifth**, Dr. Smith also dismisses some of the evidence that many other hospitals indicated an interest in buying EndoWrist repairs from Intuitive's rivals on the grounds that it reflected either the interested testimony of Intuitive's rivals or an analyst report that did not disclose its sources.<sup>375</sup> The first ground is inconsistent with the fact that he repeatedly relies on the interested testimony of Intuitive employees. He thus appears to adopt the position that interested testimony is credible when it comes from his client but not credible when it comes from his client's rivals, which is an inconsistent and highly unreliable methodology. The second ground is inconsistent with the fact that he relies on other reports which do not disclose their sources.<sup>376</sup> In any event, this response does not negate the plain

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<sup>372</sup> Goodwin Report ¶ 11; Elhauge Report ¶¶ 59-60; Trautman Report ¶¶ 19, 29, 35.

<sup>373</sup> Smith Report ¶¶ 100-101.

<sup>374</sup> See *supra* at II.B.1.ii (showing that Dr. Smith confuses these issues).

<sup>375</sup> Smith Report n. 290.

<sup>376</sup> For example, Smith cites conclusions about prices from an IBISWorld report that does not disclose its sources. Smith Report nn.581 and 651. See also, Smith Report n.16 (citing to a cancer.net webpage which apparently does not provide a source or author); *id.* at n.28 (citing a LinkedIn post); *id.* at n.298 (citing an Intuitive website claiming 22,000 peer-reviewed

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fact that not only is there evidence that many hospitals were interested in buying EndoWrist repairs from third parties, but also there is undisputed testimony that many did so. And, again, this response of his provides no rebuttal to the conclusion that some buyers wanted to buy da Vinci robots and servicing separately.

### III. INTUITIVE HAS MARKET POWER AND MONOPOLY POWER

209. Many of Dr. Smith's arguments that Intuitive lacked market power or monopoly power rely on his claims that (1) price discrimination, (2) a lack of rising prices, and (3) continued investment disprove both market definition and the possession of market power.<sup>377</sup> All three of those claims of his reflect an invalid and unreliable economic methodology for reasons discussed above in Sections II.A.1.i-iii.

210. Dr. Smith's remaining arguments on this topic attempt to rebut my showing that multiple bases affirmatively indicate market power and monopoly power. None of his arguments on those bases are persuasive for reasons discussed below.

#### *A. High Market Shares Coupled with High Barriers to Entry and Rival Expansion*

211. In my initial report, I showed that market power and monopoly power was established in each of the three relevant markets given Intuitive's high market shares coupled with high barriers to entry and rival expansion. I showed that Intuitive's market shares were 99.5-99.6% for MIST Surgery Robots, 99.87-100% for EndoWrist repair and replacement, and 99.84-100% for da Vinci servicing.<sup>378</sup> I also showed that barriers to entry and expansion were high in each of these markets.<sup>379</sup>

212. Neither Dr. Smith nor any other defense expert disputes that, if I have correctly defined the markets, my market share calculations are correct. To the contrary, Dr. Smith states that his only objection to my market share calculations rest on his claim that my market definitions are incorrect.<sup>380</sup> Nor does Dr. Smith nor

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publications without providing a source); id. at Figure 1 and n.330 (he cites to IQVIA data without describing more details of its underlying source data but referencing that "IQVIA is a leading vendor").

<sup>377</sup> Smith Report ¶178 ("continued investment is inconsistent with the behavior of a monopolist.")

<sup>378</sup> See Elhauge Report ¶¶ 112, 179, 229 & Tables 1-2, Figure 9.

<sup>379</sup> See Elhauge Report ¶¶ 114-127, 180-185, 230-231.

<sup>380</sup> Smith Report ¶¶ 135-136.

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any other defense expert dispute that, if I have correctly defined the markets, there are high barriers to entry and expansion.<sup>381</sup> Indeed, Dr. Smith agrees with my conclusion that barriers to entry are high.<sup>382</sup> Finally, no defense expert disputes my point that one can infer market power and monopoly power from high market shares and high barriers to entry and expansion.<sup>383</sup> Accordingly, no defense expert disputes that, if I have correctly defined the markets, high market shares and barriers to entry and expansion provide grounds to infer that Intuitive has market power and monopoly power in those markets. Thus, Dr. Smith's claim that Intuitive lacks market power or monopoly power fails because he is incorrect about market definition, for reasons detailed above in Part II.

### ***B. Direct Evidence of Power over Price***

213. In my initial report, I showed that direct evidence that Intuitive had power over the pricing of MIST surgery robots, EndoWrists, and da Vinci servicing provided an alternative basis for inferring that Intuitive had market power and monopoly power in those markets.<sup>384</sup> No defense expert disputes my point that one can infer market power and monopoly power from direct evidence that a firm has power over pricing. Nor does any defense expert dispute that I have accurately calculated Intuitive's Lerner Index and own-price demand elasticity for da Vinci robots, instruments, and servicing.<sup>385</sup> Dr. Smith instead argues the Lerner Index and own-price demand elasticity are not valid measures of whether a firm has enough power over pricing to have market power or monopoly power.<sup>386</sup> He is incorrect for reasons discussed below.

#### *1. The Lerner Index Provides a Useful Indicator of Power Over Price*

214. In my initial report, I showed that the Lerner Index was high for each relevant product: 0.60-0.67 for da Vinci robots, 0.72-0.75 for Instruments, and 0.82-0.84 for da Vinci servicing.<sup>387</sup> All of these Lerner Index findings indicate a power to price well above cost, and all are far higher than the 0.4 to 0.5 level that typically prevails

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<sup>381</sup> See Elhauge Report ¶¶ 114-127, 180-185, 230-231.

<sup>382</sup> Smith Report n.363. Other evidence further confirms that conclusion. See Intuitive-00278203 at -04 (2019) ("We believe that Intuitive has built strong barriers to entry during the 20 years of market leadership in robotic surgery.")

<sup>383</sup> See Elhauge Report ¶¶ 111, 128, 179, 229, 232.

<sup>384</sup> See Elhauge Report ¶¶ 129-133, 186-189, 233-236.

<sup>385</sup> See Elhauge Report ¶¶ 130, 188-89, 235-236.

<sup>386</sup> See Smith Report ¶¶ 166-72.

<sup>387</sup> See Elhauge Report ¶¶ 130, 188, 235.



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in reasonably competitive industries.<sup>388</sup> Dr. Smith does not dispute the accuracy of any of my Lerner Index calculations.<sup>389</sup> Rather, he rejects using a Lerner Index at all based on various economically invalid grounds.

215. **First**, Dr. Smith argues that the Lerner Index is not a valid measure of market power because it does not include the sunk costs that Intuitive had made in prior investments in innovation.<sup>390</sup> However, Dr. Smith’s assertion conflicts with the economics textbooks, which define market power as the ability to raise price above marginal cost, which by definition does not include the sunk cost of any prior investment.<sup>391</sup> Further, contrary to Dr. Smith’s flat rejection of the relevance of the Lerner Index to assessing market power and monopoly power, even economic literature that he himself cites acknowledges not only that “It is the conventional practice for textbooks in microeconomics and industrial organization to describe the Lerner Index as ‘the best-known’ measure of monopoly power,” but also that the most influential antitrust treatise concluded that a “monopolist’s degree of market power is commonly defined by the excess of his profit-maximizing price above his marginal cost,” where the “difference is expressed by the so-called Lerner Index  $(P-MC)/P$ ”.<sup>392</sup> That antitrust treatise continues to state that “the degree of a monopolist’s market power is commonly defined by the excess of its profit-maximizing price above its marginal cost,” and that “Such power is commonly measured by the so-called Lerner Index.”<sup>393</sup> Likewise, the ABA Handbook on Econometrics, upon which Dr. Smith himself relies, describes the Lerner Index as “a standard measure of profit margin used to assess market power.”<sup>394</sup> Leading

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<sup>388</sup> See Elhauge Report ¶¶ 130, 188, 235.

<sup>389</sup> Dr. Smith agrees that “[t]he Lerner index is derived from the deviation of price from marginal cost,” and he does not criticize my calculation of marginal cost. Smith Report ¶167.

<sup>390</sup> See Smith Report ¶¶ 137-138, 157, 166-68.

<sup>391</sup> See, e.g., CARLTON & PERLOFF, MODERN INDUSTRIAL ORGANIZATION 92 (3d Ed. 1999); JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 284 (1988); DON E. WALDMAN & ELIZABETH J. JENSEN, INDUSTRIAL ORGANIZATION 40, 437, 667 (2d ed. 2001); PHILLIP AREEDA & LOUIS KAPLOW, ANTITRUST ANALYSIS 556 (5th ed. 1997); AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 501 (2022) (“the degree of a monopolist’s market power is commonly defined by the excess of its profit-maximizing price above its marginal cost.”) Leading articles on market power and monopoly power do likewise. See William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 939 (1981); Krattenmaker, Lande & Salop, *Monopoly Power and Market Power in Antitrust Law*, 76 GEO. L.J. 241, 247 (1987).

<sup>392</sup> Kenneth G. Elzinga & David E. Mills, *The Lerner Index of Monopoly Power: Origins and Uses*, 101 AMERICAN ECONOMIC REVIEW: PAPERS & PROCEEDINGS 558, 560 (2011) (quoting AREEDA & TURNER, ANTITRUST LAW ¶ 502 (1978)).

<sup>393</sup> AREEDA & HOVENKAMP, ANTITRUST LAW ¶¶ 502-503 (2022).

<sup>394</sup> ABA Section of Antitrust Law, ECONOMETRICS 247 (2d ed. 2014).



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antitrust economics scholars like William Landes and Richard Posner have similarly noted that “the Lerner index provides a precise economic definition of market power.”<sup>395</sup>

216. Dr. Smith cites some articles to the contrary, but none provide persuasive support for his position. For example, Dr. Smith also relies on an article by Simons and Coate, but even what he quotes merely states that a positive Lerner Index cannot be regarded as “a reliable measure of market power for antitrust purposes, because it suggests that market power exists whenever price is even modestly above some empirical measurement of marginal cost.”<sup>396</sup> That point is irrelevant because I made no claim that any Lerner Index above zero indicates market power for antitrust purposes. My claim was that a Lerner Index far above the level that typically prevails in reasonably competitive industries usefully indicates market power, especially where (as here) it is corroborated by many other indicia of market power and monopoly power.

217. Dr. Smith also cites an article by Fisher and McGowan, but all that article found that was that “accounting profits” was not an accurate measure of whether the firm earned an excess “economic rate of return on an investment.”<sup>397</sup> That article thus does not apply here for two reasons: (1) it concerned “accounting profits”, rather than the Lerner Index; and (2) it did not address “monopoly power” in the antitrust sense of whether a firm (having acquired a position through investment) has the power to raise prices above competitive levels,<sup>398</sup> but rather in the finance sense of whether the firm has earned excess returns on its investments. Many firms acquire monopoly power through desirable investments, but the possession of monopoly power is not itself deemed anticompetitive by antitrust economics. Rather, the antitrust economics inquiry into monopoly power is instead calculated to determine the extent to which a firm has enough market power that it could create significant anticompetitive economic harm if it engages in anticompetitive conduct. However desirable the initial acquisition of monopoly power through investment may be, that

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<sup>395</sup> William M. Landes & Richard A. Posner, *Market Power in Antitrust Cases*, 94 HARV. L. REV. 937, 938 (1981).

<sup>396</sup> Smith Report ¶167d, quoting Joseph J. Simons & Malcolm B. Coate, *United States v. H&R Block: An Illustration of the DOJ's New But Controversial Approach To Market Definition*, 10 JOURNAL OF COMPETITION LAW & ECONOMICS 543, 552-5553 (2014).

<sup>397</sup> See Franklin M. Fisher & John J. McGowan, *On the Misuse of Accounting Rates of Return to Infer Monopoly Profits*, 72 AMERICAN ECONOMIC REVIEW 82, 82 (1983).

<sup>398</sup> AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 501 (2022) (“Market power is the ability to raise price profitably by restricting output.... A defendant firm has market power if it can raise price above the competitive [level] without a total loss of sales.”)

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does not alter the economic harm created if a firm with such monopoly power engages in anticompetitive conduct.

218. Dr. Smith likewise cites an article by Lindenberg and Ross, but Dr. Smith misleadingly omits the fact that this article actually found, “The Lerner index is, from all three regressions, an important contributor toward explaining monopoly and Ricardian rents.”<sup>399</sup> The article does say that the Lerner Index may not adequately explain “market power” in the sense that some of the price-marginal cost difference may come from economies of scale or cover fixed costs, but that is because the article is (like Fisher & McGowan) not using the term “market power” in the antitrust of whether the firm has the power to raise prices above competitive levels, but rather in the finance sense of whether the firm has earned excess rates of return on its investments.<sup>400</sup> Again, their usage misses the point that antitrust economics does not condemn the possession of market power or monopoly power, but rather the use of such power to impose anticompetitive restraints.

219. Similarly, Dr. Smith relies on an article by Elzinga and Mills, but its criticism of the Lerner Index assumes one is “using the Index to assess departures from the social optimum”, or to “call for an antitrust remedy”, rather than to simply neutrally assess whether a firm has the market power to raise prices above competitive levels.<sup>401</sup> Dr. Smith also misleadingly omits the fact that (as quoted above) Elzinga and Mills acknowledged that economics textbooks “describe the Lerner Index as ‘the best-known’ measure of monopoly power” and the leading antitrust treatise states that a “monopolist's degree of market power is commonly defined by [its] . . . Lerner Index.”<sup>402</sup>

220. Dr. Smith’s contrary assertion that high Lerner Index levels do not indicate market power appears to conflate the distinct economic issues of (a) whether market power and monopoly power exists with (b) whether its existence necessarily indicates anticompetitive economic harms. He complains that a high Lerner Index “is in no way an indication of competitive harm.”<sup>403</sup> It is true that a high Lerner

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<sup>399</sup> Eric B. Lindenberg & Stephen A. Ross, *Tobin’s Q Ratio and Industrial Organization*, 54 *Journal of Business* 1, 27 (1981).

<sup>400</sup> *Id.* at 2-4, 6-7, 28.

<sup>401</sup> Kenneth G. Elzinga & David E. Mills, *The Lerner Index of Monopoly Power: Origins and Uses*, 101 *AMERICAN ECONOMIC REVIEW: PAPERS & PROCEEDINGS* 558, 559, 561 (2011).

<sup>402</sup> *Id.* at 560.

<sup>403</sup> Smith Report ¶167. One of the articles that Dr. Smith cites for his position explicitly conflates that distinction and acknowledges that he is not using the term “market power” in the antitrust

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Index does not necessarily indicate any anticompetitive economic harms. A firm may have a high Lerner Index because it made desirable investments in innovation to obtain patents that excluded rivals in a way that helped it earn monopoly profits. But that does not alter the reality that, having obtained those patents that exclude rivals, the firm does now have monopoly power. Nor does the fact that a firm earned its monopoly power mean that it is economically efficient for it to engage in any anticompetitive conduct that would increase its profits above the levels that its patent protection would otherwise provide.

221. Other parts of Dr. Smith’s analysis provide further evidence that he is confused about the economic difference between the existence of monopoly power and the existence of anticompetitive economic harms from the challenged conduct. In his analysis of whether Intuitive’s profit margins indicate market or monopoly power, Dr. Smith argues that Intuitive’s high profit margins were desirable because they were necessary to incentivize its investments in innovation.<sup>404</sup> Such arguments do not bear on whether Intuitive possessed market or monopoly power. They are rather arguments that Intuitive’s tying restraints were desirable because they helped it earn a profit margin that was higher than the level of monopoly profits it would have earned if it had to rely only on its patent protections and that this higher-than-normal monopoly profit margin was necessary to incentivize its investments in innovation. In other words, they are really arguments that tying restraints that help a firm earn more than the ordinary patent reward have a procompetitive justification because patent law under-rewards firm investments in innovation. I thus address his

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sense. That article is Daniel A. Crane, *Market Power Without Market Definition*, 90 NOTRE DAME LAW REVIEW 31 (2014) (emphasis added), which states “antitrust law has generally conceived of market power in an absolute sense by comparing the actual market to some textbook ideal market . . . . But market power only makes sense as an expression, in relative terms, of the distance between the market as it is and a competitive counterfactual—the market as it reasonably could be absent anticompetitive conduct.” *Id.* at 33. In this statement, Professor Crane is acknowledging first that he is not using “market power” in the antitrust sense and that he is instead defining it by whether it indicates the presence of “anticompetitive conduct.” Likewise, when Professor Crane criticizes the Lerner Index, it is because he says it is “only weakly correlated with the *normative* functions that the market power inquiry is supposed to serve.” *Id.* at 34. But in fact the Lerner Index and the market inquiry is not designed to be a normative inquiry into whether anticompetitive conduct has occurred. It is designed to be an empirical inquiry into whether the firm possesses a power to raise prices above competitive levels, which is in turn relevant to judging whether any alleged anticompetitive conduct by it would be likely to create anticompetitive economic harm. Further, Dr. Smith misleadingly omits that Professor Crane himself acknowledges that “the Lerner Index . . . is widely discussed as an objective economic measure of market power.” *Id.* at 57.

<sup>404</sup> Smith Report ¶¶ 138, 173-79.

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arguments on this score below in Section VI.A, where I explain he is mistaken in his claim.

222. **Second**, Dr. Smith critiques my conclusion that Intuitive’s Lerner Indexes were much higher than the 0.4 to 0.5 level that typically prevails in reasonably competitive industries on the ground that although such levels are typical, the ABA Handbook on Econometrics states – as I explicitly noted – that “there is no defined rule for identifying market power.”<sup>405</sup> That is true, as I acknowledged, but a high Lerner Index certainly provides a valuable measure of market power.

223. Dr. Smith’s arguments to the contrary imply that, because the ABA states there is no defined rule, there is no level of profit margin in this industry that would ever support a conclusion of monopoly, or even market, power.<sup>406</sup> That does not follow. Although it is a matter of degree and judgment, a higher Lerner Index clearly indicates greater power over price and thus is more likely to indicate market and monopoly power. Moreover, one must take into account that because of how Lerner Index levels are measured, differences among them imply greater increases in a power over price than one might think. The 0.4 to 0.5 level that typically prevails in reasonably competitive industries indicates prices that are 67-100% above marginal cost.<sup>407</sup> In contrast, the 0.60-0.67 level that Intuitive gets for da Vinci robots indicates prices that are 250-300% above marginal cost, the 0.72-0.75 level that Intuitive gets for Instruments indicates prices that are 357-400% above marginal cost, and the 0.82-0.84 that Intuitive gets for da Vinci servicing indicates prices that are 555-625% above marginal cost.

*2. A Low Own-Price Demand Elasticity Provides a Useful Indicator of Power Over Price*

224. In my initial report, I showed that Intuitive’s own-price demand elasticity was low for each relevant product: 1.49-1.67 for the da Vinci robots, 1.33-1.39 for Instruments, and 1.19-1.22 for da Vinci servicing.<sup>408</sup> Neither Dr. Smith nor any other expert disputes my calculation of Intuitive’s own-price demand elasticities. Dr. Smith instead dismisses this evidence on the grounds that, because these own-price

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<sup>405</sup> Smith Report ¶ 169 (quoting Elhauge Report ¶ 130 n.313).

<sup>406</sup> Smith Report ¶¶ 168-171.

<sup>407</sup> Let’s call the Lerner Index  $L$ . Then by definition  $(P-MC)/P = L$ . This can be rearranged as  $P/MC = 1/(1-L)$ . Plugging the Lerner Index into the latter formula thus provides us with the ratio of price to marginal cost.

<sup>408</sup> See Elhauge Report ¶¶ 131, 189, 236.

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demand elasticities are calculated from the Lerner Indexes, he believes they cannot provide any new information.<sup>409</sup> But Dr. Smith does not contest the point that economics textbooks prove that a profit-maximizing firm prices at whatever level results in a Lerner Index that equals 1 divided by its own-price demand elasticity.<sup>410</sup> This economic proof is what provides additional important information that is not evident from the Lerner Index figure itself, because it means that the Lerner Index not only tells us the extent to which a firm prices above marginal cost, but also tells us why marginal costs are the costs relevant to pricing decisions and what the own-price demand elasticity is.

225. Because the Lerner Index by definition is  $(P-MC)/P$ , this economic proof means that a profit-maximizing firm will charge whatever price results in  $(P-MC)/P = 1/\varepsilon$ , where  $P$  is the price,  $MC$  is the marginal cost, and  $\varepsilon$  is the firm's own-price demand elasticity. Regardless of whatever need a firm may have to recoup sunk investment costs, if a firm chose prices that were less than profit-maximizing it would necessarily get lower profits and thus be less able to recoup those sunk investment costs. What the proof shows is that the prices a profit-maximizing firm will charge will depend only on its marginal cost and its own-price demand elasticity. The reason economics finds that the costs that affect profit-maximizing pricing decisions are only marginal costs is simple: marginal changes in price can only have marginal effects on output and can thus only affect marginal costs, not fixed or sunk costs.<sup>411</sup> This economic proof thus demonstrates why Dr. Smith's contrary assertion that firms will set prices in a way that considers fixed or sunk costs reflects an invalid and unreliable economic methodology.<sup>412</sup>

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<sup>409</sup> See Smith Report ¶ 172.

<sup>410</sup> See, e.g., CARLTON & PERLOFF, MODERN INDUSTRIAL ORGANIZATION 92-93 (4th ed. 2005).

<sup>411</sup> AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 503a (2022).

<sup>412</sup> See Smith Report ¶¶ 137-138, 157, 166-68. Dr. Smith's Deviceco hypothetical does not disprove this fundamental point of economics. See Smith Report ¶¶ 173-177. In his hypothetical, Deviceco is somehow able to sell a product for \$11 for which the marginal cost is \$1. Because in a competitive market other firms would offer the product at marginal cost, Deviceco would not be able to continue selling the product for \$11 unless something prevented rival competitors from undercutting its price, and whatever that something would be would indicate market power. If competition that drives prices down to marginal cost would deter desirable investments in innovation, that provides a rationale for patent protection to limit that competition and increase market power to provide enough profits to cover those investments. But that does not alter the reality that the firm that gets that patent protection has market power, nor does it justify exercising that market power to exclude competition to earn profits even higher than the ordinary patent reward, as the next paragraph discusses.



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226. One might be concerned that such pricing might result in profits that fail to cover desirable sunk investment costs in innovation. That concern is the rationale for giving patent protection that limits competition for some time period in order to result in sufficient profits to cover the costs of desirable innovations. But the possible need for such patent protection does not alter the fundamental economic point that, with whatever level of market power a firm possesses because of its patent protection, the firm will maximize profits by considering only marginal costs when it sets prices.<sup>413</sup> That is, any need for patent protection to recoup innovation costs changes neither the profit-maximizing relationship between price and marginal cost nor the reality that the difference between prices and marginal costs indicates the firm's degree of market power. Patent protection instead limits competition with that innovation in order to increase the degree of the firm's market power to charge prices above marginal cost and thus increase its profits. In particular, patent protection lowers the firm's own-price demand elasticity by limiting substitution to rivals that use the same innovation, which in turn increases the profit-maximizing price that a firm will charge (given that own-price demand elasticity and its marginal costs) and thus increases its profits. But the fact that the need to cover innovation costs might sometimes warrant patent protection (which Intuitive already receives) does not mean that a firm also needs to earn profits greater than the ordinary patent reward by adding anticompetitive restraints that exclude competition more than that patent protection does.<sup>414</sup> Nor could the need to cover innovation costs possibly mean that a firm like Intuitive needs to impose anticompetitive restraints that reap profits that far exceed any sunk investment in innovation.<sup>415</sup>

227. Moreover, the proof also tells us that if we know a firm's Lerner Index, we can derive a firm's own-price demand elasticity. The latter figure is important because it measures the degree to which buyers would switch from the defendant's product to rival products or to products outside the posited market. What the figure here tells us is that, even at current profit-maximizing prices, buyers have a very low willingness to respond to price increases by substituting to the combination of rival products or products outside the posited market. This not only indicates market power, but it also provides strong evidence on market definition, particularly when one considers two things: (1) because the figure reflects substitution to both rival products or to products outside the posited market, it means the willingness of buyers to switch to products outside the posited market is even lower; and (2) because the

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<sup>413</sup> AREEDA & HOVENKAMP, ANTITRUST LAW ¶ 503 (2022) ("every firm maximizes profits by equating its marginal cost with its marginal revenue.")

<sup>414</sup> See *infra* Section VI.A.

<sup>415</sup> See *infra* Section VI.A.



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figure reflects substitution at the current profit-maximizing price for a monopolist, it overstates the willingness of buyers to substitute to products outside the posited market in response to increases above the competitive price level.<sup>416</sup> Accordingly, Intuitive's low own-price demand elasticity provides powerful evidence that buyer willingness to substitute to products outside the MIST surgery robot market at competitive price levels is very low, thus confirming all the other qualitative and quantitative evidence supporting my conclusion that those other products are not reasonably interchangeable substitutes for MIST surgery robots. Intuitive's low own-price demand elasticity on EndoWrists and da Vinci service likewise indicates that those products must not have reasonably interchangeable substitutes.

### *3. Other Indicia of Power Over Price*

228. In assessing whether Intuitive Lerner Indexes and own-price demand elasticities indicate likely market power and monopoly power, proper economic analysis should take into account that such an inference is confirmed in this case by all the other evidence that Intuitive: (a) had near-100% market shares in markets with high barriers to entry;<sup>417</sup> (b) had a demonstrable power to exclude;<sup>418</sup> (c) charged prices for MIST surgery robots that were on the order of ten times higher than prices for similar laparoscopic setups;<sup>419</sup> (d) charged prices for da Vinci servicing that were far higher than rivals charged for servicing and 40 times the median wage;<sup>420</sup> and (e) charged prices for EndoWrists that were (i) 25-40% above the levels that Intuitive planned to offer for repaired/refurbished EndoWrists if it had to compete with repaired EndoWrists, (ii) significantly higher than that of rival MIST surgery robot instruments on a per-use basis, and (iii) significantly higher than the functionally equivalent repaired EndoWrists offered by third-parties.<sup>421</sup>

229. I rebut above, in Part II, Dr. Smith's claim that Intuitive did not have high market shares because the relevant market was broader. I rebut below, in Section III.C, Dr. Smith's claim that Intuitive did not exercise any power to exclude rivals. In his section on power over price, Dr. Smith does not contest the robot and service

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<sup>416</sup> See Elhauge Report ¶ 70; see also Smith Report ¶ 131 (acknowledging that substitution rates at supracompetitive prices exceed substitution rates at competitive levels and that, if current prices already reflect market power, market definition should turn on those lower substitution rates at competitive levels, rather than on the higher substitution rates at current prices).

<sup>417</sup> See Elhauge Report ¶¶ 112, 114-127, 179-185, 229-31 & Tables 1-2, Figure 9.

<sup>418</sup> See Elhauge Report ¶¶ 134-35, 190, 237-238.

<sup>419</sup> Elhauge Report ¶ 107.

<sup>420</sup> Elhauge Report ¶ 234.

<sup>421</sup> Elhauge Report ¶ 187.

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price benchmarks and yardsticks I mentioned in the preceding paragraph.<sup>422</sup> He does critique the above-mentioned EndoWrist price benchmarks and yardsticks, but I show next that all his critiques are unpersuasive.

230. On the evidence that Intuitive charged prices for EndoWrists that were 25-40% above the levels that Intuitive planned to offer for refurbished EndoWrists if it had to compete with lower-priced rival-repaired EndoWrists, Dr. Smith argues that this simply reflects “differences in costs and quality” between new and refurbished EndoWrists.<sup>423</sup> However, Dr. Smith himself argues that it cost more to make refurbished EndoWrists than to make new EndoWrists,<sup>424</sup> so any cost difference would cut in the opposite direction of raising the price for refurbished EndoWrists. Nor does Dr. Smith offer any evidence that supports a claim that refurbished EndoWrists were inferior in quality, a claim that conflicts with evidence that refurbished EndoWrists were deemed equivalent in quality to new EndoWrists by hospitals and independent repair companies and to be as good or better than new EndoWrists by industry analysts and Intuitive itself.<sup>425</sup> Such a claim also ignores with evidence that there were no adverse events associated with repaired EndoWrists but over 100 adverse events involving injury or death associated with new EndoWrists.<sup>426</sup>

231. Further, Dr. Smith here ignores the fact that in response to competition from lower-priced rival-repaired EndoWrists, Intuitive also planned to offer a mix of new and refurbished/repaired EndoWrists for 20% below the price it charged for new EndoWrists.<sup>427</sup> Offering them in a mix with no set ratio indicates that Intuitive considered them equivalent and thought hospitals would as well. It also indicates that Intuitive thought that even the new EndoWrists would have to be priced lower in the face of competition.

232. On the evidence that Intuitive charged prices for EndoWrists that were significantly higher than that of rival MIST surgery robot instruments on a per-use basis, Dr. Smith argues that while this is true for one rival product (Senhance), it is

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<sup>422</sup> Smith Report ¶¶ 158-165. He does contest the price comparison between MIST surgery robots and similar laparoscopic setups in a separate section on market definition, *id.* ¶126, but his arguments there are incorrect for reasons discussed above in Section II.A.4. He does not appear to ever respond to the service price comparisons that I offer.

<sup>423</sup> Smith Report ¶¶ 159-160.

<sup>424</sup> Smith Report ¶¶ 160, 192a & n.457.

<sup>425</sup> Elhauge Report ¶¶ 157, 294-298, 352, 380-384.

<sup>426</sup> Elhauge Report ¶¶ 299, 381. *See also infra* Section VI.C.

<sup>427</sup> Elhauge Report ¶ 352.

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not true for another rival product (Flex) and that both products are too differentiated to make price comparisons meaningful.<sup>428</sup> For Senhance instruments, the price difference was certainly enormous: a 2019 article found that the per-procedure price for da Vinci instruments was \$3400, roughly two to four times higher than the \$800-1600 price for Senhance instruments,<sup>429</sup> and a 2018 analyst report found that the per-procedure price for da Vinci instruments was \$1300-2000, roughly two to three times the Senhance instrument price of \$700.<sup>430</sup> But the price difference was substantial for Flex as well, with the 2018 report finding that the per-procedure for da Vinci instruments was \$1300-2000, compared to \$1400 for Flex instruments.<sup>431</sup> Another factor making the comparison to the Flex instrument prices inapt is that, while the Senhance robot has a similar price to the da Vinci robot, the Flex robot price is lower.<sup>432</sup>

233. As for Dr. Smith's point about product differentiation, it is true that the da Vinci has large quality differences from rival robots, but that is precisely what gives it market power and monopoly power over its rivals. In addition, Dr. Smith misleadingly ignores the fact that the Flex is differentiated from both the Senhance and da Vinci by virtue of its "snake-like arm that can maneuver around structures to get to hard to reach places and address one of the key issues in surgery today, which is the need for straight line of sight" and ability to "save[] money by shorter time and fewer people in the OR."<sup>433</sup> The price difference between Intuitive and rival products confirms that the net quality differences give Intuitive the market power and monopoly power to charge much higher prices.<sup>434</sup> For example, the evidence that Dr. Smith puts forward that rival MIST surgical robot manufacturers had similar robot pricing suggests the per-use price difference in instruments is not from quality but from anticompetitive restraints on usage.<sup>435</sup> Dr. Smith instead leaps from the fact that firms in differentiated markets can have price and quality differences to the improper economic conclusion that any price and quality difference between a firm and its rivals, no matter how large, cannot indicate market power or monopoly power. The mere fact that firms are in the same differentiated market does not, as Dr. Smith improperly presumes, mean that no firm in that differentiated market can have market power or monopoly power.

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<sup>428</sup> Smith Report ¶ 161-163.

<sup>429</sup> Perez & Schwaartzberg (2019) at p. 6.

<sup>430</sup> Intuitive-00364420, at -440.

<sup>431</sup> Intuitive-00364420, at -440.

<sup>432</sup> Intuitive-00364420-444 at 440; Smith Report ¶162.

<sup>433</sup> Intuitive-00364420-444 at 428.

<sup>434</sup> Elhauge Report ¶ 132.

<sup>435</sup> Smith Report ¶161 n. 393.

234. Dr. Smith also argues that pricing information has to take into account not only EndoWrist prices, but also da Vinci robot and servicing prices.<sup>436</sup> But as I showed, all three were significantly elevated.<sup>437</sup> Moreover, as I show below in Section V.B.4, Dr. Smith is incorrect in his apparent assumption that any increase in EndoWrist prices would lead in price reductions for the da Vinci robot or servicing prices.

235. On the evidence that Intuitive charged prices for EndoWrists that were significantly higher than the functionally equivalent repaired EndoWrists offered by third-parties, Dr. Smith argues that this could reflect differences in quality and cost.<sup>438</sup> However, his claim that rival-repaired EndoWrists were lower quality or perceived to be so conflicts with copious contrary evidence.<sup>439</sup> On the cost difference, it is certainly true rivals could offer the same quality at a lower price because they had lower costs. But pricing at cost is precisely what the competitive level of pricing should, so the fact that Intuitive prices significantly above that competitive level confirms all the other evidence that it had market power and monopoly power.

### *C. Direct Evidence of a Power to Exclude*

236. In my initial report, I also noted that there was direct evidence that Intuitive had a power to exclude rivals that was a third alternative basis for concluding that Intuitive had market power and monopoly power.<sup>440</sup> No defense expert disputes my point that one can infer market power and monopoly power from direct evidence that a firm has exercised the power to exclude. Dr. Smith offers two responses, neither of which has any economic merit.

237. **First**, Dr. Smith claims that my analysis “involves a tautological assertion that Intuitive has monopolized a market for a product that effectively only it sells.”<sup>441</sup> To the extent Dr. Smith means to claim that no other rival has sold or could ever sell a product in the markets that I have defined, his claim is factually incorrect: I identify rival suppliers that actually sold in each of the markets for MIST surgery robots,

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<sup>436</sup> Smith Report ¶164.

<sup>437</sup> See Elhauge Report ¶¶ 107, 130, 187-188, 234-235.

<sup>438</sup> Smith Report ¶165.

<sup>439</sup> See *supra* Section III.B.3; *infra* Section VI.C.

<sup>440</sup> Elhauge Report ¶¶ 134-35, 190, 237-38.

<sup>441</sup> Smith Report ¶ 137.

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EndoWrist repair and replacement, and da Vinci servicing.<sup>442</sup> My report also details evidence that others could have sold in the latter two markets but for the anticompetitive restraints.<sup>443</sup> To the extent Dr. Smith means to claim that “effectively only [Intuitive] sells” the relevant products because the market shares of rivals has been too small, then his point uses an unreliable economic methodology because it would find no power to exclude whenever that power was exercised in a highly effective manner. Such near-total exclusion does not negate a power to exclude; it shows that power is extremely high. That is particularly so here give that Intuitive was ultimately able to drive all its rivals out of the markets for EndoWrist repairs and replacement and da Vinci servicing altogether, thus achieving 100% exclusion.<sup>444</sup> This is the most extreme possible evidence of a power to exclude.

238. **Second**, Dr. Smith argues that Intuitive’s ability to exclude competitors is not a demonstration of market power because he claims that Intuitive committed to exclude competitors with these ties from the moment it entered the market.<sup>445</sup> This argument relies on his incorrect premises that: (1) when Intuitive was the first entrant into the MIST surgery market, it must have lacked market power; and (2) Intuitive “committed” to use the challenged ties from the moment of entry.<sup>446</sup> It further rests on his invalid economic claim that satisfying those premises means the challenged ties must reflect procompetitive justifications, rather than an exercise of market power.<sup>447</sup>

239. As discussed above in Section II.B.1.iv, he is incorrect in both of his premises. Intuitive had market power from the time it was the first entrant into the MIST surgery market and thus was a monopolist in that new market. Nor did Intuitive impose the same challenged ties when it first entered the market. Further, Dr. Smith does not even purport to provide evidence for his additional claim here that Intuitive somehow “committed” to impose those challenged ties from the moment of entry.

240. Moreover, even if (contrary to fact) both his premises were correct, his economic claim still would be invalid. His claim would give new entrants that

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<sup>442</sup> Elhauge Report ¶ 112 & Table 1; Elhauge Report ¶ 179 & Table 2; Elhauge Report ¶ 229 & Corrected Figure 9.

<sup>443</sup> Elhauge Report Section IV.B.3 (titled “Potential Entrants to Third-Party EndoWrist Repair Were Foreclosed Due to Intuitive’s Exclusionary Restraints”) and V.C.3 (titled “Potential Entrants to Third-Party da Vinci Service Were Foreclosed Due to Intuitive’s Exclusionary Restraints”).

<sup>444</sup> Elhauge Report ¶ 179 & Table 2; Elhauge Report ¶ 229 & Corrected Figure 9.

<sup>445</sup> Smith Report ¶ 180.

<sup>446</sup> Smith Report ¶ 180.

<sup>447</sup> Smith Report ¶ 180.

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anticipate gaining market power incentives to impose inefficient tying from the moment of entry in order to immunize future anticompetitive tying that would increase their profits. Further, even if one thought that this evidence suffices to infer that some procompetitive justification exists for the challenged ties, that evidence would not show that Intuitive lacks the market power to exclude rivals. Indeed, Dr. Smith's procompetitive theories depend on Intuitive having that power to exclude rivals.<sup>448</sup> Internal documents indicate that Intuitive was aware it was excluding competition and that excluding competition would result in higher profits for Intuitive.<sup>449</sup> Sometimes the anticompetitive economic harms of tying that excludes rivals might be offset by procompetitive justifications, but that would not alter the reality that this market power to exclude was necessary to impose the justified tie. In any event, here there is no valid procompetitive justification, as discussed below in Part VI.

#### **IV. INTUITIVE'S TYING AND EXCLUSIVITY RESTRAINTS FORECLOSED RIVALS FROM REPAIRING ENDOWRISTS OR SERVICING DA VINCI ROBOTS**

##### ***A. Undisputed Evidence Shows Intuitive Imposed Contractual Prohibitions on Purchasing from Its Rivals***

241. In my initial report, I showed that Intuitive's contracts with all its da Vinci robot customers prohibited those customers from buying EndoWrist repairs or da Vinci service from any third parties throughout the class period.<sup>450</sup> No defense expert disputes this showing. To the contrary, Dr. Smith explicitly confirms that Intuitive imposed these prohibitions on all customers and has done so throughout the whole class period.<sup>451</sup> Accordingly, it is undisputed that Intuitive at a minimum imposed exclusive dealing requirements that prohibited rival EndoWrist repairs and da Vinci service.

242. My initial report also showed that, if one accepts my conclusion that da Vinci robots, EndoWrist repairs, and da Vinci servicing are separate products, throughout

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<sup>448</sup> See *infra* Part VI.

<sup>449</sup> See, e.g., Elhauge Report ¶¶249-251 (Intuitive monitored and enforced its restraints to foreclose rivals); *id.* ¶¶ 269-280, 318-324 (Intuitive's enforcement of its restraints successfully drove out rivals and deterred rival entry); *id.* ¶159 (Intuitive aware that excluding competition would benefit Intuitive financially).

<sup>450</sup> See Elhauge Report ¶¶ 242-260.

<sup>451</sup> See Smith Report ¶ 84.



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the class period Intuitive systemically tied the da Vinci robots to EndoWrist repairs and da Vinci service for all its customers, as well as tied da Vinci service to EndoWrist repairs.<sup>452</sup> To the contrary, Dr. Smith explicitly confirms that Intuitive required that all its customers buy a bundle of da Vinci robots, replacement instruments, and da Vinci servicing from Intuitive and has done so throughout the whole class period.<sup>453</sup> He also explicitly declines to contest my showing that Intuitive also denied da Vinci services to hospitals that purchased EndoWrist repairs from rivals and that, if those are separate products, that constitutes another tie.<sup>454</sup>

### ***B. Case Evidence Shows That These Contractual Prohibitions Excluded Rivals***

243. Although we agree on the scope and meaning of Intuitive’s restraints, Dr. Smith disputes my assessment of the extent to which Intuitive’s restraints foreclosed rival sales based on various grounds, none of which have any economic merit.

#### ***1. Independent Repair Companies (IRCs) Did Compete Against Intuitive***

244. Dr. Smith argues that third-party companies that repair EndoWrists or service da Vinci robots are not really “competitors” on the ground that they do not offer “comparable” products or services and are “extracting rents from Intuitive’s intellectual property and reputation.”<sup>455</sup> His argument fails on multiple grounds, as detailed below.

245. ***First***, he cites no evidence for his assumption that the third-party companies do not offer comparable products or services to Intuitive, and his assumption conflicts with the evidence.<sup>456</sup>

246. ***Second***, he cites no literature to support his claim that firms do not count as being competitors unless their products are comparable, which conflicts with economics textbooks and his own analysis elsewhere, which finds differentiated products of different quality can be in the same market.<sup>457</sup>

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<sup>452</sup> See Elhauge Report ¶¶ 242-260.

<sup>453</sup> See Smith Report ¶ 84 & n.295.

<sup>454</sup> See Smith Report n.295.

<sup>455</sup> Smith Report ¶ 231. See also *id.* n.437 (claiming that these arguments show that “third parties have not been foreclosed from legitimate markets for medical equipment repair”); *id.* ¶ 217 (asserting that Intuitive has not “excluded rivals” because its refurbished EndoWrists “differ substantially” from their reset EndoWrists).

<sup>456</sup> See *supra* Section II.B.2.ii; *infra* Section VI.C; Elhauge Report ¶¶ 157, 294-298, 352, 380-384.

<sup>457</sup> Smith Report p.11, 13, ¶¶ 107-108 (citing an economics textbook).

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247. **Third**, he cites no literature to support his implicit claim that the foreclosure of lower-quality rival products cannot create anticompetitive economic harms. Even when (unlike here) the rival products are of lower quality, foreclosing them can reduce a price constraint on the higher-quality product, enabling it to charge even higher prices than the quality difference would merit, with the result that the foreclosure increases its market power and results in supracompetitive pricing.

248. **Fourth**, his claim that third-party repair companies are not really competitors conflicts with copious evidence that they in fact competed with Intuitive before it drove them from the market, and that Intuitive viewed them as competitive threats that could take away sales.<sup>458</sup> For example, Katie Scoville, Director of New Product Verification, Packaging, and Product Labeling at Intuitive, testified that she viewed third-party companies as a competitive threat that could affect Intuitive’s sales.<sup>459</sup> One of Dr. Smith’s opinions in the Rebotix case was that “each ‘repair’ by Rebotix (and its distributors and agents) effectively displaced one new instrument sale by Intuitive.”<sup>460</sup> As I wrote in my Initial Report, and Dr. Smith did not contest, such “‘displacement’ is the cornerstone of competition, with the threat of losing business to a rival spurring companies to lower prices or raise quality.”<sup>461</sup> Likewise, the fact that Intuitive had contractual restraints against buyers using independent repair companies for EndoWrist repairs or da Vinci servicing and bothered to enforce those restraints shows that Intuitive regarded those independent repair companies as a competitive threat.<sup>462</sup>

249. **Fifth**, his claim that third-party companies are not real competitors conflicts with Dr. Smith’s own argument that the ties were pro-competitive because they preserved Intuitive investment incentives by foreclosing rival competition in EndoWrist repair and da Vinci servicing that would otherwise have taken away Intuitive sales and reduced Intuitive’s profits.<sup>463</sup>

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<sup>458</sup> See, e.g., Elhauge Report Sections II.D.2 (title begins “Replacement with Repaired EndoWrists Is a Substitute for Replacement with New EndoWrists ...”), ¶¶ 179, 229.

<sup>459</sup> Scoville Deposition, May 26, 2021 at 6:2-7, 76:19-25 (“Q. ...Did Intuitive consider third-party EndoWrist refurbishers to be a threat to Intuitive’s sales of EndoWrists? A. We discussed that it would be a factor in our sales numbers for certain third parties.”).

<sup>460</sup> Expert Report of Loren K. Smith, Ph.D., July 26, 2021 in *Rebotix Repair LLC v. Intuitive Surgical, Inc.*, Case No. 8:20-cv-02274 (Document 108-20 filed 12/01/21).

<sup>461</sup> Elhauge Report ¶159.

<sup>462</sup> See Elhauge Report ¶¶ 242-260.

<sup>463</sup> See Smith Report at pp.8-9, ¶¶ 212, 214, 217-219.

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250. **Sixth**, Dr. Smith’s argument that third-party companies are merely “extracting rents” from Intuitive’s intellectual property and reputation rests on his premise that incentivizing Intuitive’s investments in innovation requires not only the ordinary profits that flow from patent protection, but also the additional profits that follow from using restraints that exclude competition more than its patent protection alone would.<sup>464</sup> An argument that Intuitive is entitled to those additional profits is necessary to support any claim that rivals who take away those profits are free riding and extracting rents. In short, this argument rests on the premise that excluding rival competition is a procompetitive justification because it incentivizes investments in innovation. I show that argument is flawed theoretically and factually below in Section VI.A. But even if the argument were valid, showing a procompetitive justification for restraining rival competition is not at all the same as showing that those rivals are not real competitors who could be foreclosed at all. Moreover, the free-riding argument ignores the reality that the rivals made investments of their own, as Dr. Smith expressly acknowledges,<sup>465</sup> so are not merely free riding on the efforts of others.<sup>466</sup>

251. **Finally**, Dr. Smith also suggests the even broader argument that third-party repair companies are never real competitors because “Without Intuitive’s innovations and the associated safety protocols, these third-party companies would not have a ‘service’ to offer.”<sup>467</sup> By that logic, because auto repair shops would not exist unless cars existed, an auto manufacturer monopolist could always tie the sale of cars to the purchase of auto repair from the manufacturer. Indeed, this logic would mean that every maker of any medical or non-medical equipment would always be able to tie it to a term preventing any third-party repairs. The economic literature does not support a claim that any firm that offers repairs for products it did not make “free rides” on the equipment maker’s investments and thus extracts rents. Such an argument equates free riding with failing to enter into the equipment and repairs markets simultaneously, thus allowing ties that create entry barriers by requiring entrants to enter both markets at the same time.

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<sup>464</sup> See Smith Report at pp.8-9, ¶¶ 211-212, 214-215, 217-219.

<sup>465</sup> See Smith Report ¶¶ 45 (noting that Rebotix invested \$5 million to develop its Interceptor chip for the S/Si EndoWrist instruments).

<sup>466</sup> Dr. Smith also asserts that the fact “some of these third-parties’ prices are set as a percentage of Intuitive’s list prices, as opposed to their costs, is indicative that third-parties are free-riding on Intuitive’s innovations.” Smith Report ¶ 215. But he cites to no literature or reasoning supporting this economic assertion, and I am unaware of any economic theory that would justify it.

<sup>467</sup> See Smith Report ¶ 232.

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## 2. *IRCs Were Interested in Competing*

252. Dr. Smith argues that third-party companies that repair EndoWrists or service da Vinci robots “are not interested in competing”.<sup>468</sup> But the evidence he cites for this claim does not support it.

253. He claims third-party companies are not interested in competing because one rival employee testified that entry by another rival could require it to lower its prices.<sup>469</sup> But all that testimony shows is that the independent repair companies competed not only with Intuitive, but with each other, in a way that lowers prices, which confirms that they were competitors and that competition is good for buyers

254. He claims they are not interested in competing because another rival employee testified that it would not allow other rivals to reverse engineer its technology because it had invested a lot to develop it.<sup>470</sup> But all that shows is that rivals in this market, like all firms, protect their intellectual property.

255. Dr. Smith complains that the two preceding pieces of testimony indicate that rivals “show serious concern at the prospect of increased competition in EndoWrist resets”.<sup>471</sup> But the fact that rivals might be concerned about competition with more rivals does nothing to show that those rivals are not really competing with Intuitive or those rivals; if anything, it shows the contrary. Nor do rivals have to be altruistic and unconcerned about their own profits in order for competition from those rivals to have salutary effects on market prices. In fact, economic models of competitive markets assume every firm is only interested in maximizing its own profits.

256. Finally, Dr. Smith argues that third-party companies are not interested in competing with Intuitive because they do compete in other equipment repair markets and yet “have spent significant time and money trying to circumvent EndoWrist counters and Intuitive contract provisions.”<sup>472</sup> This a *non sequitur*. The fact that third-party companies not only compete in other equipment repair markets, but also have been willing to spend significant time and money trying to circumvent Intuitive’s anticompetitive restraints to compete in the repair and service markets at issue in this case shows that they are highly interested in competing.

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<sup>468</sup> Smith Report ¶¶ 232-233.

<sup>469</sup> Smith Report ¶ 232.

<sup>470</sup> Smith Report ¶ 232.

<sup>471</sup> Smith Report ¶ 232.

<sup>472</sup> Smith Report ¶ 233.

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*3. IRCs Were Completely foreclosed from the Market*

257. Dr. Smith argues that even if the challenged tying restraints “anticompetitively foreclosed third parties from competing, the foreclosure share would not be 100 percent” because “many hospitals would continue to purchase EndoWrists and servicing exclusively from Intuitive.”<sup>473</sup> He cites no literature to support his claim that a tying restraint that prevents a buyer from choosing a rival tied product does not foreclose that buyer if it would have chosen to buy the tied product from the defendant in a but-for world without that restraint. His claim confuses the concept of a foreclosure share with a but-for market share. Even if third-party repair companies would not achieve a 100% market share in the but-for world, this does not negate the fact that they were foreclosed from 100% of the market in the actual world. Even if some buyers would buy the same tied product in the but-for world, they are still foreclosed because they are not free to make a different choice, and those buyers still suffer higher actual prices whether they would have bought from Intuitive or rivals in the but-for world.<sup>474</sup>

258. Further, his claim yet again conflicts with the principles set forth in the treatise on which he otherwise relies. As that treatise states: “A tying agreement is not defeated by evidence that a buyer would have purchased the defendant’s tied product anyway.... Thus, once the requisite agreement or conditioned sale appears, whether the agreement or condition *caused* buyers to purchase the defendant’s tied product rather than a rival’s is not in issue...”<sup>475</sup> The treatise explains that the reason is that:

“Speculation about what buyers would have done had the defendant allowed them to exercise independent judgment is often unreliable and involves the very sort of burdensome inquiry into actual market conditions the per se rule was meant to avoid. The tribunal would need to examine the buyers’ state of mind at the time of the tying agreement and would need to know not only what buyers thought but what they would have thought in the absence of the tying condition. Moreover, the very existence of the tie prevents buyers from changing their minds and discourages rivals, including new entrants, from trying to woo the buyers from the defendant. There is little reason to undertake that burden when the defendant itself doubted the outcome sufficiently to impose the restraint and when there is a better test. The best way to test whether buyers would otherwise have taken the defendant’s tied

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<sup>473</sup> Smith Report ¶¶ 234-35.

<sup>474</sup> Elhauge Report ¶¶ 315, 397.

<sup>475</sup> See Areeda, Hovenkamp, and Elhauge, *supra* note 256, at ¶1753c (emphasis in original).

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product would be to offer the tying and tied products separately. If the best the defendant can say about otherwise unlawful tying is it has no effect, there is little reason to tolerate it.”<sup>476</sup>

259. The treatise on which Dr. Smith relies further stresses that instead the set of foreclosed buyers includes any buyers who were **covered** by a tying condition, regardless of whom they would have purchased from without the condition. The treatise states: “the foreclosure includes all sales that are, as a practical matter, covered by the defendant's tie-ins, even if the defendant previously sold the tied product to the same customers without a tie.”<sup>477</sup> The treatise also adds:

“all purchases covered by the tie should be counted as foreclosed even when many of the defendant's customers had voluntarily purchased the same volume of the second product from it before there was any tie-in. Although the tie has not increased the defendant's sales of the tied product to those customers or the market share represented by them, it has suppressed their previous freedom to transfer their business to competing suppliers during the life of the tying agreement.”<sup>478</sup>

260. Accordingly, because it is undisputed between the defense experts and me that Intuitive’s contracts covered all its customers and prohibited all of them from buying EndoWrist repairs or da Vinci servicing from rivals, the correct measure of the foreclosure share in both those markets is 100%.<sup>479</sup> This foreclosure share properly includes even the small fraction of customers who violated those prohibitions to buy EndoWrist repairs or da Vinci servicing from rivals because the choices of those customers were still restrained and Intuitive enforced those restraints to eventually stop those customers from buying from Intuitive’s rivals and drove those rivals out of the market altogether.<sup>480</sup> But even if one were to conservatively treat as unforecasted the breakthrough sales that some rivals were temporarily able to obtain in violation of these restraints, the foreclosure shares would remain enormous, over 99.8% in each year for the EndoWrist repair and replacement market and over 99.9% in each year for da Vinci servicing and over 99.3% in each year for all servicing of MIST surgery robots.<sup>481</sup>

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<sup>476</sup> See Areeda, Hovenkamp, and Elhauge, *supra* note 256, at ¶1753c1) (emphasis in original).

<sup>477</sup> IX Areeda & Hovenkamp, ANTITRUST LAW ¶1709a (3d ed. 2011).

<sup>478</sup> IX Areeda & Hovenkamp, ANTITRUST LAW ¶1709d (3d ed. 2011).

<sup>479</sup> See Elhauge Report ¶¶ 265, 315.

<sup>480</sup> See Elhauge Report ¶¶ 265-280, 315, 318-324.

<sup>481</sup> See Elhauge Report ¶¶ 266, 315-316.



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## V. THE EXCLUSION OF INTUITIVE’S RIVALS CAUSED ANTICOMPETITIVE ECONOMIC HARMS

261. In my initial report, I detailed extensive evidence that the challenged restraint’s exclusion of Intuitive’s rivals caused anticompetitive economic harms compared to a but-for world without Intuitive’s restraints.<sup>482</sup> Remarkably, Dr. Smith has no section in his report that attempts to rebut this showing of anticompetitive economic harms. His explanation for this gap in his analysis is that: “Intuitive’s conduct has procompetitive business rationales. Hence, irrespective of any competitive harms, which, as I explained above, I see no evidence of, Intuitive’s challenged conduct is justified as a matter of economics.”<sup>483</sup> This argument fails on multiple grounds.

262. **First**, Dr. Smith’s argument relies on his mistaken economic premise that any procompetitive effect justifies a restraint, no matter how large the anticompetitive economic harm and how weak the procompetitive effect. He cites no literature to support that claim, which conflicts with standard antitrust economics, which instead weighs the magnitude of the anticompetitive and procompetitive effects and considers whether the procompetitive effects were passed on to buyers and could have been achieved with less anticompetitive alternatives.

263. **Second**, Dr. Smith is mistaken that Intuitive’s restraints are justified by procompetitive effects. I detail the reasons why below in Part VI.

264. **Third**, Dr. Smith’s explanation makes clear that his only basis for concluding that he saw no evidence of competitive harms was his analysis “above”, which is to say in Parts I-V of his report.<sup>484</sup> But those Parts of his report were limited to his claims that all the tied items were a single product, that the relevant market included all surgical options, and that Intuitive lacked market power. As I showed above, each of his claims on those points is economically invalid and rests on unreliable economic methodologies. Moreover, even if he had shown that my analysis failed to establish my market definitions and prove market power, his logic fails to take into account the standard principle of antitrust economics, stated in the antitrust treatise on which he relies, that direct proof of actual anticompetitive economic harms can obviate the need to inquire into market power, which is just a surrogate

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<sup>482</sup> See Elhauge Report ¶¶ 332-375.

<sup>483</sup> Smith Report ¶181.

<sup>484</sup> Smith Report ¶181.

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for anticompetitive economic harms.<sup>485</sup> Thus, the direct proof of anticompetitive economic harms that I offered, and that Dr. Smith fails to rebut, would suffice as a matter of economics even if I failed to establish my relevant market definition and market power.

265. Nor would it matter even if (contrary to reality) Dr. Smith were correct that the tied items were a single product because the contractual restraints would still constitute exclusive dealing that foreclosed EndoWrist repair and service competition that would otherwise have lowered prices and expanded consumer choice.<sup>486</sup> Dr. Smith himself acknowledges that this anticompetitive price effect is plausible, and rejects this point based only on his claim that the product market included other surgical options.<sup>487</sup> His argument on this point thus ultimately rests on his market definition argument, which as I have shown above is both incorrect and would not (even if correct) support ignoring direct evidence of anticompetitive economic harms.

266. Dr. Smith not only ignores the standard economic principle that direct evidence of anticompetitive economic harms obviates the need to prove market power, but also asserts the incorrect reverse claim that a tie can cause anticompetitive economic harms only if monopoly power exists. Indeed, he falsely claims that I “appear[] to acknowledge that, for an alleged tie to be anticompetitive, the accused firm must have monopoly power.”<sup>488</sup> I never said anything of the kind. What he cites from me is a passage that instead states that whether hospitals voluntarily agreed to the tie does not affect the economics where, as here, their “agreement was procured by tying those restraints to access to monopoly products.”<sup>489</sup> The fact that *monopoly* power has this implication does not mean that *market* power would not also suffice to produce anticompetitive economic harm. I never say that monopoly power, as opposed to simply market power, is needed for a tie to create anticompetitive economic harm. Nor does Dr. Smith cite any literature to support his claim, which conflicts with the economic literature. That economic literature finds that four of the five main anticompetitive economic harms that can be created by tying require tying market power, rather than monopoly power, and that the remaining fifth anticompetitive harm requires instead a substantial foreclosure share

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<sup>485</sup> VII P. AREEDA, ANTITRUST LAW ¶ 1511, p. 429 (1986).

<sup>486</sup> Elhauge Report ¶¶ 193, 240.

<sup>487</sup> Smith Report ¶128.

<sup>488</sup> Smith Report ¶186 n.438.

<sup>489</sup> Smith Report ¶186 n.438 (quoting Elhauge Report ¶¶ 259).

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in the tied market.<sup>490</sup> Likewise, even if the tied items were deemed a single product, the challenged restraints would still constitute exclusive dealing, and anticompetitive economic harms from such exclusive dealing could be proven directly, rather than inferred from a substantial foreclosure share.<sup>491</sup>

267. Having explained above why Dr. Smith is wrong to think he can dismiss evidence of anticompetitive economic harm without engaging with it, I now turn to the affirmative evidence of anticompetitive economic harm that I found. In my initial report, I found that the challenged restraints created five economic harms: “(1) higher prices and lower output resulting from higher prices, (2) suppressed use limits, (3) loss of buyer choice, (4) reduced innovation, and (5) higher environmental costs.”<sup>492</sup> Of those five harms, no defense expert offers any substantive rebuttal regarding the loss of buyer choice and higher environmental costs. As for the other three economic harms, no defense expert affirmatively claims to disprove them, but they sometimes offer claims that those economic harms might not have occurred, which I rebut below.

#### ***A. Loss of Buyer Choice and Higher Environmental Costs***

268. I showed in my initial report that the restraints denied market choices that buyers wanted to make and that this loss of buyer choice constitutes an anticompetitive economic harm.<sup>493</sup> Dr. Smith does not deny that is so. Indeed, Dr. Smith acknowledges that the restraints *do* restrict buyer choices, but he argues that this is justified because hospitals and surgeons have incentives to make unsafe choices.<sup>494</sup> He is once again confusing the existence of an anticompetitive economic harm with a procompetitive justification for imposing it. His procompetitive justification is economically invalid for reasons discussed below in Section VI.C, but even if it were valid it would have to weighed against the economic harm of reducing buyer choice, rather than simply assumed to negate that harm. As one surgeon testified, “I would love to be able to use an instrument until it is no longer useful as determined by me.”<sup>495</sup>

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<sup>490</sup> See EINER ELHAUGE, U.S. ANTITRUST LAW & ECONOMICS 464-472 (4th ed. 2022).

<sup>491</sup> VII P. AREEDA, ANTITRUST LAW ¶ 1511, p. 429 (1986).

<sup>492</sup> See Elhauge Report ¶¶ 332-375.

<sup>493</sup> See Elhauge Report ¶¶ 345-346.

<sup>494</sup> Smith Report ¶209.

<sup>495</sup> Dickens (in *Restore*) Dep. at 30:19-31:21.

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269. I also showed in my initial report that the restraints increased environmental costs.<sup>496</sup> No defense expert provides any substantive response to this point. Nor does any defense expert point to any evidence that the restraints did not increase environmental costs. To the contrary, in his deposition, Mr. Goodwin confirmed that, in his experience, “hospitals seek to reduce waste,” that waste is “expensive,” and that it is “wasteful” when “a device has to be thrown away before the end of its useful life.”<sup>497</sup>

270. To be sure, Dr. Smith offers the bald assertion that harms from loss of buyer choice and higher environmental costs are “not present” because of his argument that third-party companies are rent-extractors rather than “real” competitors offering a comparable product.<sup>498</sup> However, that argument is baseless for reasons detailed above in Section IV.B.1. Further, he offers no explanation of how that argument, even if valid, could possibly disprove the clear loss of buyer choice and higher environmental costs.

### ***B. Higher Prices and Lower Output***

271. My initial report showed that, given Intuitive’s market power, fundamental economics showed that the exclusion of rivals created by the challenged restraints would raise prices and lower output for both EndoWrists and da Vinci servicing.<sup>499</sup> Dr. Smith does not dispute that this economic prediction is correct if Intuitive has market power. His only response to this point is his claim that Intuitive lacked market power, which is economically flawed for reasons detailed above in Parts II-III.

272. My initial report also provided direct evidence that the challenged restraints anticompetitively inflated prices for both EndoWrists and da Vinci servicing.<sup>500</sup> Dr.

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<sup>496</sup> See Elhauge Report ¶¶ 349.

<sup>497</sup> Goodwin Dep. at 32:7-36:21. Further, a guideline for “Medical Device and Product Evaluation” that he cites in his report instructs perioperative nurses to “Assess the environmental impact of a device or product,” stating, “Perioperative RNs [registered nurses] have an ethical obligation and professional responsibility to address environmental exposures.... Serving as stewards includes implementing practices that will help ... reduce waste.” Ass’n of Perioperative Registered Nurses, Guideline for Medical Device and Product Evaluation, in GUIDELINES FOR PERIOPERATIVE PRACTICE, Section 2.4 (2022).

<sup>498</sup> Smith Report ¶ 231.

<sup>499</sup> See Elhauge Report ¶¶ 333-339.

<sup>500</sup> See Elhauge Report ¶¶ 350-357, 364-368.

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Smith does not dispute some of this direct evidence,<sup>501</sup> and none of his responses on the other direct evidence are persuasive, for reasons detailed next.

*1. Evidence That Project Dragon Planned Price Cuts in Response to Competition*

273. I showed that at a time when Intuitive was concerned about potential competition from IRCs in the market for EndoWrist repair and replacement, Intuitive's Project Dragon proposed to respond to such competition by offering refurbished EndoWrists at a 25-40% discount from the prices it was charging for new EndoWrists or offering a mix of new and refurbished EndoWrists at a 20% discount from those prices.<sup>502</sup> As I noted, these proposals provide a good benchmark of the sort of discounts Intuitive would have offered if its restraints had not succeeded in squelching rival competition.<sup>503</sup> Preventing the offering of such discounts thus caused the anticompetitive economic harm of raising prices.

274. Dr. Smith responds that "Intuitive's contemplated refurbished instruments are substantively different from that of third-party reset EndoWrists."<sup>504</sup> But that is neither here nor there. Even if we thought (contrary to the evidence<sup>505</sup>) that Intuitive's refurbished EndoWrists would have been superior to rival reset EndoWrists, preventing the offering of refurbished instruments at discounted prices to buyers would still be an anticompetitive economic harm that raised the prices those buyers paid. Dr. Smith's observation that "a key objective" of Project Dragon was to "reduce cost per procedure" makes, rather than rebuts, the point because a typical objective of any firm responding to lower-priced entry would be to reduce its prices to compete.<sup>506</sup>

275. Dr. Smith also argues that these Project Dragon proposals were not a response to the threat of competition from rivals providing EndoWrist repair because Intuitive's discussions of instrument refurbishing (including Project Dragon) began in 2017, which predated the first sale by repair rivals in 2018.<sup>507</sup> However, Dr. Smith does not dispute the evidence collected in my report showing that Intuitive was not

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<sup>501</sup> For example, he does not dispute that Intuitive quotes \$995 per hour for service and that this is approximately 40 times the median hourly wage of medical equipment repairers. Elhauge Report, ¶234.

<sup>502</sup> See Elhauge Report ¶¶ 351-352, 394-396.

<sup>503</sup> See Elhauge Report ¶ 352.

<sup>504</sup> Smith Report ¶ 227a.

<sup>505</sup> See Elhauge Report ¶¶ 157, 294-299, 352, 380-384, 395.

<sup>506</sup> Smith Report ¶ 227a.

<sup>507</sup> Smith Report ¶ 227a & n.573.

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only already aware by 2016 that Rebotix had developed and was marketing a method to repair EndoWrists, but also had already threatened customers in 2016 not to use EndoWrists repaired by third parties.<sup>508</sup> Given this undisputed evidence, all Dr. Smith's evidence does is confirm my point that, by the start of 2017, Intuitive was concerned about "potential competition" from these repair rivals and then in 2017 prepared a competitive response before those entrants could make their first U.S. sales.<sup>509</sup>

276. Dr. Smith also argues that these Project Dragon proposals were not a response to the threat that rivals might offer EndoWrist repairs because Intuitive's discussions of instrument refurbishing focused on European markets.<sup>510</sup> However, his argument simply ignores the evidence I collected that Intuitive's Project Dragon documents specifically mentioned the objective of combating third-party EndoWrist resets.<sup>511</sup> Further, Dr. Smith himself states that "Project Dragon was piloted in France and Germany" in 2017,<sup>512</sup> and other evidence shows that by 2016, Rebotix had a patent for its method of resetting EndoWrists and was selling EndoWrist repairs in Europe,<sup>513</sup> and that by 2016 Intuitive was actively monitoring and working to prevent IRC EndoWrist repair in Europe.<sup>514</sup>

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<sup>508</sup> See Elhauge Report ¶ 304.

<sup>509</sup> See Elhauge Report ¶¶ 351-352. See also, Intuitive-00147379-412 at 392 (Intuitive flagged that Rebotix was active in France); Intuitive-002068990- at 991 (Intuitive email noting Rebotix "are in the business of resetting the electronic chip on our instruments to reset the 10 lives." "I hope we can find ways to prevent them from growing this business at our own expense." Rebotix has "current customers in France, U.K. Coming up live soon"); Intuitive-00104929-951 (Presentation titled "Instrument Refurbishing (Project Dragon) (at 929) noted "we are already seeing 3rd party companies enter with reprogrammed dV instruments" (at 931) and the existence of a "[s]mall player in EU but expect to see larger players enter US." (at 937)).

<sup>510</sup> Smith Report ¶ 227a & n.573.

<sup>511</sup> See Elhauge Report ¶¶ 351-352 & nn.831-832.

<sup>512</sup> Smith Report n.573.

<sup>513</sup> Elhauge Report ¶ 305; Smith Report ¶ 45.

<sup>514</sup> See Intuitive-00614687-688 at 688 (email chain including a message from Dave Rosa (of Intuitive) informing Randy Fagin (of HCA Healthcare) regarding Intuitive's "response to the proposed reprogramming of EndoWrist instruments," a message from Randy Fagin (of HCA) to Dave Rosa (of Intuitive) asking Intuitive "to provide guidance to our US and UK HCA facilities," and a message from Daniel Bourcier (of Surgical International) whose team was "coming from the States" to offer a re-manufacture service to save the hospitals "approximately one million pound per year, per robot"); Intuitive-02068246-297 at 294 (a 9/2016 document describing the Rebotix interceptor including "[t]he Rebotix stance for compliance with EU medical device regulations"); Intuitive-00103331-333 at 332 (6/2017 Email from Katie Scoville of Intuitive indicating "Two sites have continued to use [R]ebootix. One site (France) recently committed to stop. Still working



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277. Dr. Smith also argues that the reason that Intuitive abandoned Project Dragon was not that Intuitive was able to exclude rivals using the challenged restraints, but rather because “Intuitive found that the refurbishment program would be ‘cost prohibitive’ relative to manufacturing new EndoWrist instruments.”<sup>515</sup> But evidence that Intuitive concluded that making refurbished EndoWrists would be “cost prohibitive” relative to making new EndoWrist instruments in the actual world, where its challenged restraints successfully excluded all rival competition, does not mean that making refurbished EndoWrists would have been unprofitable in the but-for world. Thus, such evidence is consistent with the proposition that Intuitive’s ability to exclude rivals using the challenged restraints led it to abandon Project Dragon. Dr. Smith’s contrary claim fails for at least four reasons.

278. **First**, Dr. Smith’s “relative” qualifier makes clear that Intuitive was simply concluding that making refurbished EndoWrists was less profitable than selling new EndoWrists at its prevailing monopoly prices. That is how profit-maximizing firms rationally make choices and thus what they generally mean by saying they decided against something because it was “unprofitable.” Indeed, when asked whether Intuitive did not pursue “its instrument refurbishment program” because it was “not profitable,” Intuitive’s Chief Product Officer Bob DeSantis testified, “Yeah. Financially it turned out to be essentially a wash between building new instruments and going through the entire process of collecting and remanufacturing to original specs.”<sup>516</sup> Such testimony indicates that Intuitive concluded that, in the actual world, the costs of making refurbished instruments would be approximately the same as the costs of making new instruments. But at those costs and its actual prevailing monopoly prices, selling instruments was immensely profitable, earning Intuitive a profit margin of 72-75%.<sup>517</sup> Given those profit margins, Intuitive would have continued to make large profit margins even if it followed through with the Project Dragon proposal to sell a mix of new and refurbished EndoWrists at a 20% discount from its actual prevailing monopoly prices. It is thus clear that Intuitive executives

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with UK site to clarify legal, compliance, and clinical risks.”). *See also*, Intuitive-367520-521 (5/30/2017 Intuitive email about “questions you used in EU regarding refurb instruments” with attachment named “12-8-16\_EU\_Refurbishment\_Survey\_DRAFT\_TT\_SP\_KMA\_LC\_edits\_TT\_edits.docx”); Intuitive-00423684-736 at 684 (dated 3/31/2017 and titled “I&A Refurbishment Feasibility Update”).

<sup>515</sup> Smith Report ¶ 192a; *see also id.* ¶ 227a (claiming that “Intuitive has not launched an instrument refurbishment program like Project Dragon because of the high costs entailed to refurbish EndoWrists”).

<sup>516</sup> DeSantis (in *Rebotix*) Dep. at 266.

<sup>517</sup> *See supra* Section III.B.1.

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are using the terms “cost prohibitive” and “not profitable” to simply mean less profitable than continuing to sell new instruments at prevailing monopoly prices.

279. **Second**, there are also economic reasons to think that selling refurbished EndoWrists would have been more profitable in a but-for world in which repair rivals were not foreclosed. In the actual world, Intuitive could ignore the concern that sales of used EndoWrists might cannibalize sales of new EndoWrists because Intuitive had foreclosed anyone who could repair the used ones. In the but-for world, it would be more profitable to refurbish EndoWrists because doing so would keep those used EndoWrists out of the hands of rivals who could repair them and sell a competing EndoWrist that displaced an Intuitive sale and undercut Intuitive’s monopoly price.<sup>518</sup> This is especially true if, as Dr. Kim Parnell suggests, rivals could make repaired EndoWrists at a lower cost,<sup>519</sup> but also true even if rivals could not because the large profit margins would incentivize rivals to undercut prevailing prices even if their costs were no lower. Accordingly, in the but-for world, Intuitive would have had incentives to offer refurbished EndoWrists, even if they cost just as much to make as new EndoWrists and were priced the same, because offering the refurbished EndoWrists would provide an additional profit gain by keeping used EndoWrists out of the hands of repair rivals who could use them to displace Intuitive’s EndoWrist sales and undercut its monopoly prices.

280. **Third**, the decisions that Intuitive made in the actual world about how it would make refurbished EndoWrists are not necessarily the decisions it would have made in a but-for world where it would face rival repair competition. In particular, Dr. Kim Parnell indicates that Intuitive’s decisions reflected its insistence on using unduly costly methods to make refurbished EndoWrists.<sup>520</sup> In a but-for world with rival repair competition, Intuitive would not have had the luxury of making avoidable decisions that raised its costs, so it would have faced competitive pressure to use a lower-cost method that would make it even easier for it to profitably offer refurbished EndoWrists at a discount from prevailing monopoly prices.

281. **Fourth**, the timing of Intuitive’s proposal and abandonment of Project Dragon is consistent with the proposition that: (i) it initially proposed offering refurbished instruments when it faced a new threat of rival repair competition because doing so

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<sup>518</sup> Indeed, Dr. Smith himself has opined, “It is my opinion that each ‘repair’ by Rebotix (and its distributors and agents) effectively displaced one new instrument sale by Intuitive.” Expert Report of Loren K. Smith, Ph.D., July 26, 2021 in *Rebotix Repair LLC v. Intuitive Surgical, Inc.*, Case No. 8:20-cv-02274 (Document 108-20 filed 12/01/21).

<sup>519</sup> See Parnell Rebuttal Report ¶ 178.

<sup>520</sup> See Parnell Rebuttal Report ¶¶ 27, 178.

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was profitable under those circumstances; and (ii) it abandoned that proposal when it successfully drove out rival repair competition because eliminating rival competition made offering refurbished instruments less profitable. In contrast, I have seen no evidence that Intuitive’s refurbishing costs increased over this time period, so the theory that Intuitive abandoned Project Dragon solely due to high costs cannot explain why Intuitive proposed Project Dragon in the first place.

*2. EndoWrist Prices Were Significantly Higher Than for Rival MIST Surgery Robot Instruments*

282. I showed that per-use prices were significantly higher for EndoWrists than for rival MIST surgery robot instruments that were not subject to similar restraints.<sup>521</sup> This evidence indicates that the restraints imposed by Intuitive significantly raised prices above competitive levels. Dr. Smith makes two arguments in response.

283. To begin with, Dr. Smith argues that the instruments used with one rival MIST surgery robot (TransEnterix’s Senhance) “more closely resemble” laparoscopic instruments than Intuitive’s EndoWrists.<sup>522</sup> This is misleading because it is only true for some of the Senhance instruments, and Dr. Smith has not provided information about which type of Senhance instrument is more prevalent.<sup>523</sup> Regardless, there is evidence that, except for cables, EndoWrist materials and components are “very, very similar” to comparable laparoscopic instruments.<sup>524</sup> While Dr. Howe points to differences between EndoWrists and laparoscopic instruments, Intuitive itself highlighted the similarities between the two when applying for FDA clearance.<sup>525</sup>

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<sup>521</sup> See Elhauge Report ¶ 353.

<sup>522</sup> Smith Report ¶ 227b.

<sup>523</sup> Smith Report n.576, citing to Longmore et al., p. 14.

<sup>524</sup> Posdal (in *Restore*) Dep. at 12:17-13:9(Q. Yeah. Has S.I.S. ever done any comparison of the materials or components of the da Vinci instruments with the materials and components of laparoscopic instruments? A. Very, very similar. They’re made up of insulation that’s commonly used, steel that’s commonly used, and produced essentially like instruments that have been on the market for decades. Q. What about the cables on the da Vinci, how do they compare with any components of the laparoscopic instruments? [] THE WITNESS: Standard laparoscopic instruments differ from the da Vincis in that they don’t have those activating cables. They’re direct driven by a handle system.”).

<sup>525</sup> Intuitive Answers ¶109 (In response to an allegation about what Intuitive told the FDA about EndoWrists and traditional instruments: “Intuitive admits that it represented in its 510(k) filing for Endoscopic Instruments and Accessories filed on January 19, 1999, that (1) “[t]he Intuitive Surgical Instruments are essentially identical in terms of shape, size, function and tissue effect to the standard Class I and II endoscopic instruments cited”; (2) “[t]he Intuitive Surgical Endoscopic

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Moreover, Dr. Smith provides no evidence that EndoWrists were not similar to the instruments used with the other rival MIST surgery robot (Medrobotics' Flex), and they were also priced substantially lower than EndoWrists.<sup>526</sup>

284. Next, Dr. Smith argues that the rival MIST surgery robots were of lower quality than da Vinci surgery robots.<sup>527</sup> But a quality difference in robots does not alter the fact that the rival instruments were similar in quality, so one would expect them to be priced similarly if both were priced on competitive markets.

### *3. Intuitive's Prices for Replacement EndoWrists Were Significantly Higher Than Rival-Repaired EndoWrists*

285. I showed that per-use prices were significantly higher for Intuitive's EndoWrists than for rival-repaired EndoWrists.<sup>528</sup> This evidence indicates that the restraints imposed by Intuitive significantly raised market prices above competitive levels by preventing buyers from being able to purchase EndoWrists from those lower-priced rivals.

286. Dr. Smith argues that rival-repaired EndoWrists were not functionally equivalent to Intuitive's EndoWrists,<sup>529</sup> but that argument ignores copious evidence to the contrary.<sup>530</sup> Moreover, even if their instruments were not functionally equivalent, that does not alter the reality that anticompetitive economic harms would be suffered by every buyer who would have preferred to purchase from those rivals at their lower price over purchasing EndoWrists at their higher price. Nor would it change the reality that preventing buyers from switching to those lower-priced rivals would prevent a but-for reduction in prices for Intuitive's EndoWrists, and thus also inflict anticompetitive economic harms on the buyers who would continue to buy Intuitive's EndoWrists in the but-for world.

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Instruments and Tools are substantially equivalent in intended use and/or method of operation" to certain predicate devices").

<sup>526</sup> See Elhauge Report ¶ 353; see *supra* Section III.B.3 (citing *Intuitive-00364420*, at -440 to show that the per-procedure price for da Vinci EndoWrists was \$1300-2000, compared to \$1400 for Flex instruments, contrary to Dr. Smith' assertion that they were not priced significantly differently).

<sup>527</sup> Smith Report ¶ 227b.

<sup>528</sup> See Elhauge Report ¶¶ 354-357.

<sup>529</sup> Smith Report ¶ 227c.

<sup>530</sup> See *supra* Section III.B.3; *infra* Section VI.C.1; Elhauge Report ¶¶ 157, 294-299, 352, 380-384, 395.

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287. Dr. Smith also argues that Intuitive has to charge higher prices because it bears higher costs given that it bears the costs of EndoWrist research, development, and manufacture.<sup>531</sup> His argument is economically flawed because, as shown above in Section III.B.1, economics textbooks indicate that profit-maximizing firms price based on marginal costs, rather than based on any sunk costs for research and development or fixed costs of manufacturing. Even if an incumbent monopolist did have higher marginal costs than entrants who would charge lower prices, that would not magically mean that the incumbent would be able to maintain those higher prices in the face of lower-priced rivals. The fact that an incumbent monopolist might want to charge higher prices to cover its higher costs does not mean it could have done so in the face of lower-priced competition. In any event, even if an incumbent monopolist with higher costs must charge higher prices than rivals, that does not negate the anticompetitive economic harm from preventing buyers from being able to buy from those lower-priced rivals. Indeed, Dr. Smith's argument amounts to the absurd claim that, because all manufacturers of a new product necessarily bear costs that are not borne by firms that repair those products, a manufacturer that restrains any rival repairs for its machines never causes anticompetitive economic harm.

288. Finally, Dr. Smith argues that OEMs typically are able to charge higher prices than third parties.<sup>532</sup> But that may reflect the fact that, unlike here, OEMs typically offer a better product than their rival. In any event, regardless of whether the typical price difference reflects a quality or brand-reputation difference, my benchmarks project that in the but-for world Intuitive would charge a higher price than rivals, with Intuitive charging a blended price for new and refurbished instruments that is a 20% discount from current prices and rivals charging a price for repaired instruments that is a 45% discount from current prices.<sup>533</sup>

#### *4. Dr. Smith's Analysis Fails to Rebut the Evidence That the But-for World Would Have Had Lower Prices and Higher Output*

289. In addition to offering the above unpersuasive critiques of the direct evidence that its anticompetitive restraints elevated prices, Dr. Smith offers various speculative claims about why he believes that the but-for world might not have had lower prices or higher output. Not only are each of these claims speculative, but each is economically invalid for various reasons detailed below.

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<sup>531</sup> Smith Report ¶ 227c.

<sup>532</sup> Smith Report ¶ 227c.

<sup>533</sup> See Elhauge Report ¶¶ 352, 356, 396-397.



290. **First**, Dr. Smith argues that “innovation does not necessarily imply higher prices because the relevant point of comparison is what price would the customer have paid absent the innovation.”<sup>534</sup> However, that argument presupposes the claimed procompetitive effect that the restraints are necessary to induce Intuitive to invest in innovation. That argument is baseless given economic theory and evidence, and in any event that argument necessarily rests on the premise that the direct effect of the restraints was to increase Intuitive’s prices, otherwise the restraints could not increase its profits enough to cover the costs of those investments.<sup>535</sup> That direct effect is an economic harm, unless proven to be offset by some procompetitive effect.

291. **Second**, Dr. Smith argues that “Intuitive’s Extended Use Program is an example where innovation reduced price per use.”<sup>536</sup> However, Dr. Smith offers no claim that the challenged restraints were necessary to induce Intuitive to engage in that sort of price-**reducing** innovation, let alone any evidence or economic analysis to support such a claim. If anything, economic theory indicates that the threat of rival competition is what induces price-reducing innovation, the evidence indicates that the threat of competition is what helped induce the Extended Use Program in this case, and the combination of economics and evidence thus indicates that Intuitive would have introduced the Extended Use Program earlier in a but-for world with more competition from rivals providing EndoWrist repair.<sup>537</sup> Indeed, even Dr. Smith acknowledges that the Extended Use program was a response to competitive pressure, which conflicts with any claim that it was induced by the challenged restraints.<sup>538</sup> Moreover, Dr. Smith is once again internally inconsistent because he treats extending the allowed usage of EndoWrists as “innovation” when done by Intuitive,<sup>539</sup> but as illegitimate competition when done by its rivals.<sup>540</sup>

292. **Third**, Dr. Smith argues that bundling complementary goods inherently lowers prices.<sup>541</sup> Because this claim is really a procompetitive justification, I discuss it below in Section VI.B, where I show it is based on an utter mischaracterization of the economic literature.

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<sup>534</sup> Smith Report ¶ 220.

<sup>535</sup> See *infra* Section VI.A.

<sup>536</sup> Smith Report ¶ 220.

<sup>537</sup> See Elhauge Report ¶¶ 360-362.

<sup>538</sup> See Smith Report ¶ 205.

<sup>539</sup> Smith Report ¶ 220.

<sup>540</sup> Smith Report Part VII.

<sup>541</sup> Smith Report ¶ 223-224.



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293. **Fourth**, Dr. Smith argues that the challenged restraints lowered Intuitive’s prices based on evidence that Intuitive sometimes offered discounts from the inflated actual list prices on the da Vinci robot to particular buyers.<sup>542</sup> However, he provides no evidence to support any claim that Intuitive could not have offered those discounts on its robots without tying them to other products.<sup>543</sup> Nor does evidence that robots were sometimes discounted from actual list prices provide any support for a claim that Intuitive offered combined prices for all the tied products that were lower than the prices it would have offered in the but-for world. Dr. Smith’s method of focusing on discounts from actual list prices conflicts with fundamental economic principles and textbooks about how to define the but-for world for purposes of assessing anticompetitive impact and damages.<sup>544</sup> Moreover, his observation that Intuitive selectively discounts from its normal actual prices on da Vinci robots to some buyers affirmatively indicates that Intuitive does price discriminate in this market, contrary to his assertion elsewhere, and under his own approach indicates that Intuitive does have market power, contrary to the premise for many of his arguments.<sup>545</sup>

294. **Fifth**, Dr. Smith argues that had Intuitive been faced with greater competition from rivals providing EndoWrist repair, Intuitive “may” have responded by reducing the price for EndoWrists, but increasing the price for da Vinci robots or da Vinci servicing in a way that left buyers on balance worse off.<sup>546</sup> However, Dr. Smith and I both agree that the Extended Use program rolled out in October 2020 was a response to competitive pressure that lowered the per-use price of Xi EndoWrists.<sup>547</sup> Yet Dr. Smith’s own data shows that, despite this lower price for Xi EndoWrists, Intuitive lowered both the real and nominal price of the Xi da Vinci robot from 2020-2021 without any significant increase in the real or nominal price for da Vinci servicing.<sup>548</sup> More generally, Dr. Smith’s data shows that recent declines in Intuitive prices for EndoWrists have coincided with decreases, not increases, in real

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<sup>542</sup> See Smith Report ¶ 225a, 229-230.

<sup>543</sup> See *infra* VI.B.2.iii.

<sup>544</sup> ABA SECTION OF ANTITRUST LAW, PROVING ANTITRUST DAMAGES: LEGAL AND ECONOMIC ISSUES 89 (3d ed. 2017); Daniel L. Rubinfeld, *Antitrust Damages* 378, 381, in RESEARCH HANDBOOK ON THE ECONOMICS OF ANTITRUST LAW (2013); Daniel L. Rubinfeld, *Quantitative methods in antitrust, Issues in Competition Policy*, ABA ANTITRUST SECTION (2008).

<sup>545</sup> See *supra* Section II.A.1.i.

<sup>546</sup> Smith Report ¶¶ 226, 230, 239, 243.

<sup>547</sup> Elhauge Report ¶¶ 342-43, 360; Smith Report ¶¶ 205, 220 & nn. 644-645 & Figure 3.

<sup>548</sup> Smith Report Figures 2, 4-6.

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prices for da Vinci robots and da Vinci servicing.<sup>549</sup> Finally, Dr. Smith's indicates that, when it was actually faced with increased competition from rivals providing EndoWrist S/Si repair from 2018-2021, Intuitive reduced real prices not only for da Vinci instruments, but also for da Vinci servicing.<sup>550</sup> (Intuitive could not compensate with higher prices for S/Si da Vinci robots during this period because Intuitive had no significant S/Si robot sales from 2018-2021.<sup>551</sup>)

295. Moreover, Dr. Smith does not deny that the assumptions underlying the single monopoly profit theory do not apply to the challenged ties in this case, and thus that it does not support any conclusion that any but-for lowering of prices for the tied EndoWrists would have been offset by higher prices for da Vinci robots and servicing.<sup>552</sup> Rather, Dr. Smith claims only that my showing that the single monopoly profit theory is inapplicable is irrelevant because he believes that Intuitive lacks monopoly power and that its restraints have lowered its prices.<sup>553</sup> But his claim that Intuitive lacks market power is economically flawed as shown above in Parts II-III, and his claim that the challenged restraints lowered Intuitive's prices is economically flawed as shown above in this section and below in Section VI.B.

296. Relatedly, Dr. Smith claims that without the challenged restraints, Intuitive "may be induced to raise platform prices to hedge against the liability and reputational risks."<sup>554</sup> Dr. Smith is wrong about those liability and reputational risks, for reasons detailed below in Section VI.C. But even if he were right about them, there is no economic reason why such risks would increase Intuitive's ability to raise prices. If anything, a firm can charge less for a riskier product. Dr. Smith is here confusing a possible motive to desire higher prices with a greater economic ability to raise prices. Moreover, as an economic matter, Intuitive would rationally be motivated to charge the profit-maximizing price even without those risks, so there is no rational reason that such risks would even increase Intuitive's motive to raise prices, especially because such risks (if they existed) would not increase marginal costs, but rather would impose a risk of incurring some lump-sum liability judgment or reputational loss of good will.<sup>555</sup>

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<sup>549</sup> See *supra* II.A.1.ii & *infra* VI.B; Smith Report Figures 2-6.

<sup>550</sup> Smith Report Figures 3-4 & pp. A-25 to A-27 (Figures A-7 to A-9).

<sup>551</sup> See Elhauge Report Figure 3.

<sup>552</sup> Elhauge Report ¶¶ 369-375.

<sup>553</sup> Smith Report ¶ 229.

<sup>554</sup> Smith Report ¶ 230.

<sup>555</sup> See *supra* Section III.B.1 (showing that economic textbooks make clear that profit-maximizing prices are based on marginal costs).

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297. *Sixth*, Dr. Smith argues that, even without the challenged restraints, it is “plausible” that rivals might have taken away only “a small share of sales” and in response Intuitive might have maintained or even raised prices rather than lowering them.<sup>556</sup> This argument is economically flawed in many ways:

- a) This claim is flatly inconsistent with Dr. Smith’s lead argument that Intuitive’s restraints were pro-competitive because they preserved Intuitive’s investment incentives by foreclosing rival competition in EndoWrist repair and da Vinci servicing that would otherwise have taken away significant sales from Intuitive and significantly reduced Intuitive’s prices and profits.<sup>557</sup> If rivals would have taken away only a small share of sales and failed to reduce Intuitive’s prices, they could not have significantly affected its profits and thus would not have significantly affected its incentives to invest in innovation.
- b) No defense expert cites any evidence that Intuitive ever contemplated maintaining or raising EndoWrist prices in response to competition from third party repair companies. Further, the notion that it would conflicts with the evidence that, in response to potential competition, Intuitive’s Project Dragon made proposals to offer lower prices and its Extended Use program did lower per-use prices by raising use limits.<sup>558</sup>
- c) Dr. Smith’s claim that it “plausible” that rivals’ but-for share might be so minimal that it would not lower Intuitive prices and could even raise them does not show it was likely. Dr. Smith bases his claim on his argument that, without the restraints, evidence shows that the lack of 510(k) clearance would make “some hospitals and surgeons” reluctant or unwilling to use rivals’ EndoWrist reset services, but that hardly shows that so many would be reluctant or unwilling such that rivals would have only a minimal but-for market share.<sup>559</sup> Prof. Goodwin acknowledges that “some hospitals” were willing to use EndoWrists reset by rival repairers, and at most concludes that “most hospitals” would not want to do so without 510(k) clearance.<sup>560</sup> Even if we accept both of these defense expert conclusions, they at most indicate in the but-for world rivals would have had a market share below 50%, which hardly shows that they would have had such “a small share of sales” that they

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<sup>556</sup> See Smith Report ¶ 244.

<sup>557</sup> See Smith Report at ¶¶ 14 (at pp.8-9), 212, 214, 217-219.

<sup>558</sup> See *supra* Section V.B.1; Section V.B.4 (Fifth point).

<sup>559</sup> Smith Report ¶ 245; see also *id.* ¶ 99b, 244.

<sup>560</sup> Goodwin Report ¶¶ 8-10. Goodwin’s deposition testimony also revealed that he had little basis from making claims about the inclinations of “most” hospitals, that he ignored much of the record evidence of widespread hospital interest in EndoWrist repair, and that he mischaracterized hospital and surgeon witness testimony on this issue. See Goodwin Dep. at 43:1-44:6; 102:6-112:7, 113:5-117:19, 125:3-136:22, 147:4-161:19.

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would be unable to reduce Intuitive's pricing. The but-for share of rivals offering lower prices does not need to be anywhere near 50% in order for them to exert a significant constraint on Intuitive pricing, which would benefit buyers in the but-for world whether they would have remained with Intuitive (and paid lower prices) or switched to rivals (and paid even lower prices than that for a price-quality mix they must prefer to paying a lower price for the Intuitive product). Moreover, no defense expert disputes the evidence I collected that Intuitive and industry analysts projected shares for rivals offering EndoWrist repairs that ranged from 10-15%, and either modeled shares ranging up to 50% or concluded those projected shares would be even higher without the challenged restraints.<sup>561</sup> Such but-for rival market shares would suffice to restrain Intuitive's pricing. Indeed, we have direct evidence of that because (as discussed above in Section V.B.1) Intuitive was sufficiently concerned about this projected threat of competition from third-parties providing EndoWrist repairs that Intuitive proposed in Project Dragon to begin offering to sell its own refurbished EndoWrists at a 25-40% discount from the prices it was charging for new EndoWrists.

- d) This defense expert argument depends on a need for 510(k) clearance. But no defense expert claims that 510(k) clearance applies to da Vinci servicing, and Prof. Goodwin affirmatively agrees with me and plaintiff expert Kimberly Trautman that servicing does not require 510(k) clearance.<sup>562</sup> Accordingly, any alleged need for 510(k) clearance cannot bear on anticompetitive economic harms in the da Vinci servicing market at all.<sup>563</sup>
- e) This defense expert argument about 510(k) clearance ignores the evidence that EndoWrist repair rivals either received 510(k) clearance or could have in the but-for world.<sup>564</sup> To the extent that is so, the supposed need for 510(k) clearance would dampen neither those rivals' but-for market share nor their ability to constrain Intuitive EndoWrist pricing.
- f) This defense expert argument about 510(k) clearance assumes that 510(k) clearance is required for EndoWrist repair. Dr. Smith cites no support for this assumption, while defense expert Mr. Goodwin relies on the opinion of defense expert Christy Foreman that it is needed.<sup>565</sup> However, Christy Foreman's opinion on this matter conflicts with the opinion of plaintiff expert Kimberly Trautman that FDA has not required 510(k) clearance for

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<sup>561</sup> Elhauge Report ¶ 357.

<sup>562</sup> Goodwin Report ¶ 11; Elhauge Report ¶¶ 59-60; Trautman Report ¶¶ 19, 29, 35

<sup>563</sup> Smith Report ¶¶ 99b, 244-245 (arguing only that a need for 510(k) clearance can apply to EndoWrist repairs); Goodwin Report ¶¶ 8-13 (same).

<sup>564</sup> Elhauge Report ¶¶ 287-289.

<sup>565</sup> Smith Report ¶¶ 99b, 244-245; Goodwin Report ¶¶ 12-13; Foreman Report ¶¶ 16, 75-234.

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EndoWrist repair.<sup>566</sup> Defense expert Smith does not explain why he has chosen to favor the opinion of defense expert Foreman over plaintiff expert Trautman on this issue, and Mr. Goodwin admits that he did not even review Trautman's report or consider her opinions.<sup>567</sup> I offer no opinion on this disputed topic, the resolution of which I leave to the tribunal or factfinder. I simply observe that the defense expert argument on this point depends on the tribunal or factfinder resolving this issue in the defense's favor. In contrast, my conclusion would remain the same regardless of how this issue is resolved, given the other surrounding points.

- g) Defense experts Smith and Goodwin provide no response to the evidence collected by plaintiff expert Trautman and me showing that Intuitive, its rivals, and industry analysts concluded that clearance was not required for EndoWrist repair or usage extension.<sup>568</sup> Defense expert Foreman likewise offers no response to the points that rivals and industry analysts concluded that clearance was not required for EndoWrist repairs. She does offer responses regarding Intuitive's own conclusions, but neither of her responses undermines the point that Intuitive concluded clearance was unnecessary. First, regarding the evidence that Intuitive's own Project Dragon analysis of EndoWrist refurbishing concluded that 510(k) clearance was unnecessary,<sup>569</sup> Defense expert Foreman rejects that evidence on the ground that "Project Dragon was abandoned once Intuitive determined that it was more expensive, for both Intuitive and ultimately customers, to refurbish the EndoWrist instruments."<sup>570</sup> But evidence that Intuitive rejected refurbishing EndoWrists as too expensive does not undermine the point that Intuitive concluded it would not require FDA clearance. Second, regarding the evidence that Intuitive launched extended-use EndoWrists without 510(k) clearance,<sup>571</sup> she responds that doing so was reasonable given FDA guidance at the time and because the FDA ultimately determined that launching extended-use EndoWrists did require 510(k) clearance.<sup>572</sup> But that does not alter the fact that Intuitive had concluded 510(k) clearance was not required, which is particularly telling because selling extended-use EndoWrists clearly requires selling a device owned by the seller, which Ms. Trautman's report indicates

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<sup>566</sup> Trautman Report ¶¶ 19, 29-31, 35, 82-83; Trautman Supplemental Report ¶¶ 2-3, 7-9, 51-76.

<sup>567</sup> Goodwin Dep. at 16:8-17:14.

<sup>568</sup> Trautman Report ¶¶ 68-70; Elhauge Report ¶¶ 283-284.

<sup>569</sup> See Elhauge Report ¶ 283. See also Trautman Supplemental Report ¶¶ 47-50.

<sup>570</sup> Foreman Report ¶ 260.

<sup>571</sup> See Elhauge Report ¶ 283; Trautman Report ¶¶ 68-70. See also Trautman Supplemental Report ¶¶ 41-46.

<sup>572</sup> See Foreman Report ¶¶ 245-259.



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made it more likely to require 510(k) clearance than third-party repairs of a device that remained owned by the hospital.<sup>573</sup>

- h) None of the defense experts responds to the evidence that, regardless of whether 510(k) clearance were ultimately deemed legally necessary, both Intuitive and rivals in fact launched and successfully sold repaired or modified EndoWrists to hospitals before obtaining any 510(k) clearance.<sup>574</sup> Even if such launches are ultimately deemed legally unauthorized, such launches are economically rational if firms believe either that clearance would not be deemed necessary (as the last paragraph indicates) or that any regulatory risk was worth taking to make sales in the meantime. Taking such a risk could be particularly attractive given that defense and plaintiff regulatory experts agree that, when the FDA found that a launched product lacked a needed 510(k) clearance, it could allow a firm to submit a “catch-up” 510(k) to continue marketing.<sup>575</sup> Regardless of the abstract issue of whether clearance would ultimately be legally required, what is relevant as a matter of economics for assessing anticompetitive economic harms is the actual willingness of firms to launch products and of buyers to buy them, and this unrebutted evidence shows that they were.
- i) This defense argument conflicts with all the evidence that, despite any need for 510(k) clearances, rivals were willing to sell repaired EndoWrists and da Vinci servicing and hospitals wanted to buy them. In addition to all the evidence collected in my initial report,<sup>576</sup> other evidence confirms that conclusions. For example, Edward Harrich, director of surgical services at Pullman Regional Hospital, testified: “Q. If it weren’t for Intuitive’s contractual limitations, would your hospital use Rebotix’s services to the full extent that Rebotix was willing to provide them? A. Yes.”<sup>577</sup> Another hospital’s documents indicated that Plaintiff Larkin was “looking to purchase these supplies [EndoWrists] from third party vendors and even looking into re-process our own instruments, but the availability of these services are limited.”<sup>578</sup> Finally, Intuitive’s own willingness to expend effort to impose and enforce its restraints indicates that it could not have rationally believed

<sup>573</sup> See Trautman Report ¶¶ 19, 29, 35. See also Elhauge Report ¶¶ 59-60, 283.

<sup>574</sup> Elhauge Report ¶¶ 285-286, 289, 292.

<sup>575</sup> See Foreman Report ¶¶ 239, 252; Trautman Report ¶¶ 61, 71-72. See also Trautman Supplemental Report ¶¶ 77-80 (FDA enforcement unlikely).

<sup>576</sup> See Elhauge Report ¶¶ 285-288.

<sup>577</sup> Harrich (Rebotix) Dep. at 62:6-10.

<sup>578</sup> LARKIN-00020971-974 at 971.



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that without those restraints very few buyers would want to use rivals for EndoWrist repairs or da Vinci servicing.<sup>579</sup>

298. *Seventh*, Dr. Smith argues that Intuitive’s restraints could not have suppressed output because Intuitive tries to increase use of its da Vinci system by offering financing, increasing its efficiency, and marketing its clinical and economic value.<sup>580</sup> But the fact that monopolists try to increase demand for their products by offering financing, improving efficiency, and marketing the product value does not in any way disprove the fundamental economic principle that monopolists profit from increasing their prices above competitive levels and that any such price increase necessarily lowers output below competitive levels. Dr. Smith cites no literature to support his claim that a monopolist’s efforts to increase demand for its product negates the standard economic relationship between monopoly prices and market output. Further, his claim that in this case increased prices would not reduce output conflicts with the very economics textbook on which he elsewhere relies.<sup>581</sup> His claim also conflicts with evidence I collected (none of which he disputed) showing that Intuitive, academics, Wall Street analysts, and surgeons all believed that in this market in particular lower prices would increase output.<sup>582</sup> Other evidence also conflicts with his claim.<sup>583</sup>

### *C. Suppressed Use Limits*

299. My initial report showed that evidence suggested that Intuitive reinforced its other exclusionary restraints by setting use limits on EndoWrists artificially low and explained the various anticompetitive economic harms that created, including suppressing rival repair competition, restricting buyer choice, and raising per-use prices.<sup>584</sup> No defense expert disputes that suppressing use limits would create anticompetitive economic harms. However, Dr. Smith argues that EndoWrist use limits were not artificially low because safety testing indicated that use limits could

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<sup>579</sup> See Elhauge Report ¶¶ 242-260.

<sup>580</sup> Smith Report ¶ 228.

<sup>581</sup> See Elhauge Report ¶ 337 (citing ROBERT S. PINDYCK AND DANIEL L. RUBINFELD, MICROECONOMICS 24 (8th ed. 2013))

<sup>582</sup> See Elhauge Report ¶¶ 337-338.

<sup>583</sup> See Intuitive-01017715-745 at 716 (“User Benefits of Secondary Markets” include “Increase da Vinci adoption and customers satisfaction”); Dickens (in *Restore*) Dep. at 28-29 (Intuitive’s current business plan prevented the da Vinci robot from being more available in rural and impoverished markets).

<sup>584</sup> See Elhauge Report ¶¶ 340-344, 358-363.

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not be increased beyond the increases of up to 18 uses adopted as part of the Extended Use Program.<sup>585</sup>

300. Dr. Smith's arguments ignore numerous sources of evidence that I presented to support the economic inference that current use limits are suppressed. **First**, I pointed out: (a) when competitive pressures finally pushed Intuitive to consider (as part of the Extended Use Program) whether its use limits could be extended, Intuitive staff's internal analysis estimated that its instruments could be used about 20 times; (b) Intuitive in fact tested its instruments to 30 use cycles and used training EndoWrists 30 times; and (c) other Intuitive internal analysis contemplated use limits of 40 to 100.<sup>586</sup> Dr. Smith does not respond to any of this evidence.

301. **Second**, I pointed out that Rebotix found that 29-59 uses were feasible, while Deutsche Bank found that 39-48 uses were feasible.<sup>587</sup> Hospital assessment of the evidence likewise indicated that use limits could be raised without compromising functionality.<sup>588</sup> Further, the "FDA recently gave 510(k) clearance for EndoWrists to be used beyond the limit imposed by Intuitive."<sup>589</sup> Dr. Smith does not respond to any of this evidence.

302. **Third**, I pointed out there was no reason to impose any use limits on EndoWrists because: (a) Dr. Eugene Rubach's opinion was "that the EndoWrist use limits imposed by Intuitive were arbitrary and unnecessary,"<sup>590</sup> (b) the "FDA does not require nor limit the number of uses for [Intuitive's] EndoWrist instruments"; and (c) other surgical instruments, including those compatible with Senhance surgical robots and da Vinci robot, do not have use limits.<sup>591</sup> Dr. Smith does not respond to any of this evidence. Instead, Dr. Smith cites to the extended life testing document Intuitive-00552535 as evidence that use limits are "[f]ar from 'arbitrary,'" yet this document contradicts his point as its conclusions imply that many of the

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<sup>585</sup> Smith Report ¶ 197.

<sup>586</sup> Elhauge Report ¶¶ 360-361.

<sup>587</sup> Elhauge Report ¶ 363.

<sup>588</sup> Elhauge Report ¶ 363.

<sup>589</sup> Elhauge Report ¶ 363.

<sup>590</sup> Elhauge Report ¶ 359 (citing to Expert Report of Dr. Eugene Rubach, 12/1/2022, §VI.). See also Rubach Rebuttal Report ¶¶ 3e, 5-7.

<sup>591</sup> Elhauge Report ¶ 359.

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extended use instruments could have had higher use limits than what Intuitive selected even under Intuitive’s own testing protocol.<sup>592</sup>

303. **Fourth**, I pointed out that testimony from Intuitive executives indicated that Intuitive could have tested whether it could increase use limits for its instruments as early as 2012-2013, but did not do so.<sup>593</sup> Even if we accept Dr. Smith’s characterization of Intuitive’s testing under the Extended Use Program, the fact that such testing led Intuitive to raise use limits on 13 instruments in October 2020 indicates that the use limits imposed on those 13 instruments before October 2020 were artificially low, which earlier testing would have revealed. Dr. Smith does not respond to this evidence.

304. **Fifth**, I showed that Intuitive tested only 13 X/Xi instruments, all of which Intuitive concluded could safely have their use limit increased, but could also have done similar testing on S/Si instruments and other X/Xi instruments.<sup>594</sup> The fact that, after finding that **all** the models it tested could have a higher use limit, Intuitive did not bother to test **any** of the other models indicates that safety and functionality were not the only concern. Indeed, Dr. Smith agrees with me that Intuitive adopted the Extended Use Program as a way to lower the per-use price in response to competitive pressure.<sup>595</sup> This rationally means that in a but-for world in which Intuitive would have faced more competitive pressure earlier, it would have had incentives to do testing earlier and on more than only 13 X/Xi instruments.<sup>596</sup> Dr. Smith does not respond to this evidence.

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<sup>592</sup> Item #471006 has a use limit of 15 but it “successfully passed all requirements...to prove seventeen (17) human uses;” item #471093 has a use limit of 18 but “met all applicable requirements...to support a design life of 20 human uses;” item #471309 has a use limit of 15 uses but “met all applicable requirements...to support a design life of 18 human uses;” item #471296 has a use limit of 15 but “met all applicable requirements...to support a design life of 18 human uses.” Intuitive-00552535; Intuitive Instrument & Accessory Transaction Data (for information on use limits).

<sup>593</sup> Elhauge Report ¶ 362 & n.866; DeSantis (in *Rebotix*) Dep. at 210:6-8, 171:18-22 (And, for example, in 2012, you could have tested the instruments and seen, Hey, are we seeing a higher number of uses that we can get out of them, right, using our life testing? A We could have, yes.),

<sup>594</sup> Elhauge Report ¶ 362 & n.866; DeSantis (in *Rebotix*) Dep. at 172:15-22 ( “Q. Well, you could certainly have tested the Si instruments in 2013 to determine whether additional lives were warranted; right? A. We could have, yes. Q. Did Intuitive, in fact, do any such testing? A. I don’t know. Q. Are you aware of any? A. not off the top of my head.”).

<sup>595</sup> Elhauge Report ¶¶ 342-43, 360; Smith Report ¶¶ 205, 220 & nn. 644-645 & Figure 3.

<sup>596</sup> Elhauge Report ¶¶ 360-362.

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305. Indeed, in the Rebotix case, defense expert Dr. Howe opined that “[w]hile the Extended Live Program targeted da Vinci model X/Xi instruments, the X/Xi instruments and S/Si instruments that Rebotix performed its life testing on share enough similarities that similar life testing results would be expected.”<sup>597</sup> Although in this case Dr. Howe has backed away from that opinion,<sup>598</sup> Dr. Parnell shows that “Dr. Howe . . . ignores the relevant data, which shows that Si instruments had a much lower failure rate than Xi instruments when Intuitive was considering its own refurbishment program and the extended use program.”<sup>599</sup> Dr. Parnell further collects evidence that “Intuitive recognized that Xi 8mm instrument ‘life testing’ could also ‘cover the S/Si 8mm family’ based on ‘Instrument Design Similarities,’ identical ‘range of motion of both the S/Si and Xi instruments,’ ‘Material Compatibility,’ and ‘no differences’ in reprocessing chemistry and temperatures.”<sup>600</sup> Indeed, in the Rebotix case, Dr. Howe stressed, “the X/Xi and S/Si instruments share the same drive train arrangement (e.g., four input pulleys that interface with the robot motor drive, tungsten cables that pass through the shaft to the distal wrist, and the same wrist configuration) and the distal components are considered identical for some instruments.”<sup>601</sup> This evidence indicates that, at a minimum, that Intuitive could have applied the extended use limits from its Extended Use Program to any parallel S/Si instruments.

306. Thus, even under Dr. Smith’s erroneous assumption that Intuitive could not have increased use limits any more than it did for the 13 instruments in its Extended Use Program, it is an improper economic methodology for him to ignore such undisputed evidence indicating that in the but-for world Intuitive could and would have adopted its Extended Use Program earlier and applied it to more models, including S/Si models that paralleled the X/Xi models whose use was extended by the Extended Use Program.

307. **Moreover**, since my Initial Report, Dr. Kim Parnell submitted a rebuttal report that strongly confirms the above evidence that the use limits imposed by Intuitive were suppressed. To begin with, Dr. Parnell shows that use limits are not an effective means of preventing instrument failure and fail to account for actual wear and tear.<sup>602</sup>

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<sup>597</sup> Howe (Rebotix) Report ¶ 103.

<sup>598</sup> Howe (da Vinci) Report ¶ 123.

<sup>599</sup> Parnell Rebuttal Report ¶ 155.

<sup>600</sup> Parnell Rebuttal Report ¶ 156.

<sup>601</sup> Howe (Rebotix) Report ¶ 103.

<sup>602</sup> Parnell Rebuttal Report ¶¶ 24, 126, 147, 212-249.

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308. Among other things, Dr. Parnell points out that Intuitive’s “actual RMA [i.e., returns] data shows essentially a near constant linear pattern for instrument failures (shown as number of RMAs), indicating that an instrument is no more likely to fail on any particular ‘life’ or ‘use,’ just because it has been used a number of times previously.”<sup>603</sup> Dr. Parnell also showed that the MDR data did not “show increased failure rates with increased usage” because “the number of instruments that were returned with 0 uses remaining (11) was the same as the number of instruments returned with 7, 8, and 9 uses remaining (11). And more instruments were returned with five uses remaining than were returned with one use remaining.”<sup>604</sup>

309. Dr. Parnell further shows that Intuitive’s use limits have little connection to wear and tear.<sup>605</sup> As to wear, Dr. Parnell notes that “An instance of ‘use’ itself is poorly correlated with wear” because “Intuitive relies merely on the number of ‘uses,’ even though it measures and stores data that could easily be used to more accurately measure actual usage data, e.g., actual length of time and intensity of the EndoWrist usage during a surgical procedure.”<sup>606</sup> As to tear, Dr. Parnell shows that “Intuitive’s use counter does not account for the mishandling or misuse of an instrument should it occur.”<sup>607</sup>

310. Dr. Parnell also shows that the level of Intuitive’s use limits were not based on safety testing. Rather, Dr. Parnell shows that Intuitive’s use limits were *set by its marketing personnel*, and that Intuitive intentionally chose not to test its EndoWrists beyond the marketing-determined use limits.<sup>608</sup>

311. Dr. Parnell further points out that use limits have not been imposed on laparoscopic instruments, and he rebuts Dr. Howe’s claim that differences between laparoscopic instruments and EndoWrists justify use limits on the latter.<sup>609</sup> Dr. Parnell shows that laparoscopic instruments and EndoWrists are very similar, and that any differences between them not only fail to justify use limits for EndoWrists, but indicate that EndoWrists are “more robust” and “longer lasting” than traditional laparoscopic instruments.<sup>610</sup> I offer no opinion on which of these experts is right on any engineering issues they disagree about, leaving resolution of any conflict in their

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<sup>603</sup> Parnell Rebuttal Report ¶ 147. *See also id.* ¶¶ 286-287.

<sup>604</sup> Parnell Rebuttal Report ¶ 126. *See also id.* ¶¶ 281-285.

<sup>605</sup> Parnell Rebuttal Report ¶¶ 24, 212-249.

<sup>606</sup> Parnell Rebuttal Report ¶ 213. *See also id.* ¶¶ 217-232.

<sup>607</sup> Parnell Rebuttal Report ¶ 214. *See also id.* ¶¶ 233-248.

<sup>608</sup> Parnell Rebuttal Report ¶¶ 26, 29, 147, 215, 250-261.

<sup>609</sup> *Compare* Parnell Rebuttal Report ¶¶ 22, 31-76, *with* Howe (in *In re: da Vinci*) Report ¶ 34.

<sup>610</sup> Parnell Rebuttal Report ¶¶ 22, 31-76.

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opinions on this factual issue to the tribunal or factfinder. But without resolving that engineering dispute, I can offer the following observations that are relevant to the economic issues.

312. **First**, it is market participant perceptions that affect market decisions, and several market participants or analysts indicated a market belief that the use limits could have been set higher.<sup>611</sup> On the EndoWrist-laparoscopic instrument comparison in particular, Intuitive itself highlighted the similarities of EndoWrists and laparoscopic instruments,<sup>612</sup> and deposition testimony from IRCs indicated that EndoWrist materials and components are “very, very similar” to comparable laparoscopic instruments.<sup>613</sup>

313. **Second**, even if one accepts Dr. Howe’s claims, they do not show that Intuitive did not suppress use limits. Dr. Howe claims that EndoWrist components are different from laparoscopic instruments in a way that “does not allow for unlimited, reliable surgical uses.”<sup>614</sup> But even if this narrow statement is true, all it would show is that *some* use limit should be adopted; it would not show that the low use limits set by Intuitive’s marketing personnel did not suppress uses below the levels required by safety. Dr. Howe also argues that the need for calibration and cable tensioning means he “would not expect EndoWrist instruments and traditional instruments to have the same service life.”<sup>615</sup> But even if one accepted Dr. Howe’s view that EndoWrists needed a lower use limit than the unlimited use limit imposed

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<sup>611</sup> Elhauge Report ¶ 363.

<sup>612</sup> Intuitive Answers ¶ 109 (In response to an allegation about what Intuitive told the FDA about EndoWrists and traditional instruments: “Intuitive admits that it represented in its 510(k) filing for Endoscopic Instruments and Accessories filed on January 19, 1999, that (1) “[t]he Intuitive Surgical Instruments are essentially identical in terms of shape, size, function and tissue effect to the standard Class I and II endoscopic instruments cited”; (2) “[t]he Intuitive Surgical Endoscopic Instruments and Tools are substantially equivalent in intended use and/or method of operation” to certain predicate devices”).

<sup>613</sup> Posdal (in *Restore*) Dep. at 12:17-13:9(Q. Yeah. Has S.I.S. ever done any comparison of the materials or components of the da Vinci instruments with the materials and components of laparoscopic instruments? A. Very, very similar. They’re made up of insulation that’s commonly used, steel that’s commonly used, and produced essentially like instruments that have been on the market for decades. Q. What about the cables on the da Vinci, how do they compare with any components of the laparoscopic instruments? [] THE WITNESS: Standard laparoscopic instruments differ from the da Vincis in that they don’t have those activating cables. They’re direct driven by a handle system.”).

<sup>614</sup> Howe (in *In re: da Vinci*) Report ¶ 43.

<sup>615</sup> Howe (in *In re: da Vinci*) Report ¶ 47.



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on laparoscopic instruments, that would not show that the use limit imposed by Intuitive’s marketing personnel was not suppressed below competitive levels.

314. **Third**, Intuitive had economic incentives to set use limits artificially low to reinforce its restraints on rival repair and to raise per-use prices.<sup>616</sup> No defense expert has disputed the existence of those economic incentives.

315. **Fourth**, as both Dr. Smith and I agree, Intuitive adopted the extended use program as a way to lower the per-use price in response to competitive pressure.<sup>617</sup> Accordingly, in a but-for world with more extensive competition, Intuitive would have had economic incentives to raise use limits earlier and on more EndoWrist models.<sup>618</sup>

#### ***D. Reduced Innovation***

316. My initial report pointed out that exclusionary restraints can suppress innovation, that medical commentators believed they suppressed innovation, and that direct evidence indicated they had reduced or slowed innovation in providing EndoWrists that were refurbished or had extended use limits.<sup>619</sup> Further, Dr. Smith himself acknowledges that Intuitive’s extended-use program was an “innovation.”<sup>620</sup> He also agrees with me that Intuitive adopted the extended use program in response to competitive pressure.<sup>621</sup> It thus follows that, in a but-for world with more competitive pressure from rivals who could repair and reset user counters on EndoWrists, Intuitive would have had incentives to adopt this extended-use innovation earlier and for more EndoWrist models. In short, Dr. Smith’s own opinions that the extended-use program was an “innovation” prompted by competitive pressure suffices to show that restraints that lessened that competitive pressure lowered innovation.

317. Dr. Smith’s only response to the above point is that it is narrowly focused on EndoWrist repairs and resets and does not consider broader innovation for the da Vinci system.<sup>622</sup> But in other sections of his report, Dr. Smith in his report agrees that lower competition is in general associated with lower investment in innovation,

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<sup>616</sup> See Elhauge Report ¶¶ 340, 342-344.

<sup>617</sup> Elhauge Report ¶¶ 342-43, 360; Smith Report ¶¶ 205, 220 & nn. 644-645 & Figure 3.

<sup>618</sup> Elhauge Report ¶¶ 360-362.

<sup>619</sup> Elhauge Report ¶¶ 347-348.

<sup>620</sup> Smith Report ¶ 220.

<sup>621</sup> Smith Report ¶ 205; Elhauge Report ¶ 360.

<sup>622</sup> Smith Report ¶¶ 216-217.

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including broad innovation on the da Vinci robot.<sup>623</sup> In any event, his response does not deny the anticompetitive economic effect on innovation that I demonstrated. Instead, his response constitutes a claim that the restraint has some offsetting positive effect on other innovations, a claim that I show is economically flawed below in Section VI.A.

318. Further, it also follows that preventing rivals from providing use extensions earlier and on more models also prevented innovation from those rivals. Dr. Smith rejects this claim on the grounds that when rivals extend the use of EndoWrists, that should be deemed illegitimate competition rather than innovation.<sup>624</sup> But that conflicts with his simultaneous claim that it is legitimate innovation when Intuitive extends the use of EndoWrists.

## VI. THERE ARE NO COUNTERVAILING PROCOMPETITIVE BENEFITS

319. Dr. Smith describes the economic literature as providing six rationales for tying that are not anticompetitive.<sup>625</sup> The list is telling because none of those six rationales includes Dr. Smith's main claimed procompetitive justification: his claim that tying that increases firm profits is procompetitive because it incentivizes investments in innovation.

320. In my initial report, I addressed the six procompetitive justifications that Intuitive claimed in its contention interrogatories and showed why none of them justified the restraints in this case.<sup>626</sup> For two of those potential justifications—transaction costs and compatibility costs—Dr. Smith offers no claim that they apply to the challenged restraints, let alone any supporting evidence or analysis for such a claim or any response to my analysis on either of them. On transaction costs, Dr. Smith merely lists it as a potential procompetitive justification for tying, without ever making any claim that it applies to any of Intuitive's tying restraints.<sup>627</sup> On compatibility costs, Dr. Smith does claim that the tie of da Vinci robots to EndoWrist instruments reduces compatibility costs, but he never makes any claim that this justification applies to the actual challenged restraints, which were the prohibition

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<sup>623</sup> See Smith Report ¶ 178 (“continued investment is inconsistent with the behavior of a monopolist operating in a world absent competition.”).

<sup>624</sup> Smith Report Part VII.

<sup>625</sup> Smith Report ¶ 185.

<sup>626</sup> Elhauge Report ¶¶ 376-391.

<sup>627</sup> Smith Report pp. 13-14, ¶ 185.

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on using rivals to repair EndoWrists or service da Vinci robots.<sup>628</sup> Because he never makes such a claim, he offers no response to my showing that the compatibility cost justification does not apply to those challenged restraints because they prevent rivals from repairing already-compatible EndoWrists and servicing already-compatible da Vincis, so that any compatibility cost claim would merely duplicate other claims that the lower quality of rival repairs or service justified foreclosing them from the market.<sup>629</sup>

321. Further, Dr. Smith treats two of the justifications—safety/quality and reputational/liability concerns—as one combined justification.<sup>630</sup> This makes economic sense. The reputational/liability concerns necessarily depend on there being a safety/quality issue. Further, the economic literature on which Dr. Smith relies deems safety/quality issues as creating a procompetitive rationale only when they raise reputational/liability concerns. The reason is that unless there are reputational/liability concerns that buyers have insufficient incentives to consider, any safety/quality issues can best be addressed by informing buyers about those issues and letting them decide.<sup>631</sup> I will accordingly join Dr. Smith in treating them as one combined justification.

322. The rest of this section will thus discuss Dr. Smith’s three claimed procompetitive justifications: (A) increasing profits to incentivize innovation; (B) allowing the offering of superior financial terms; and (C) reputational/liability concerns arising out of safety/quality issues.<sup>632</sup>

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<sup>628</sup> Smith Report ¶ 213.

<sup>629</sup> Elhauge Report ¶ 386.

<sup>630</sup> See Smith Report ¶¶ 182-183, 186-209.

<sup>631</sup> See, e.g. *Jean Tirole, The Analysis of Tying Cases: A Primer*, 1 COMPETITION POLICY INTERNATIONAL 1, 15 (2005) (concluding that because informational concerns can be addressed with “the widespread practice of endorsing complementary products”, it is more important that ties can be used to protect the seller from liability or reputational concerns); Elhauge Report ¶ 383 (“If there were a genuine safety/quality issue, less restrictive methods exist, such as educating hospitals on how to evaluate the condition of used or repaired EndoWrists or the quality of rival da Vinci servicing.”)

<sup>632</sup> See Smith Report ¶¶ 182-183 (boiling down his claimed procompetitive justifications to these three claims).

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***A. The Restraints Were Not Justified by a Need to Increase Profits Beyond the Ordinary Intellectual Property Reward in Order to Incentivize Investments in Innovation***

323. Dr. Smith’s lead justification for the challenged restraints is that they were necessary to encourage Intuitive to invest in innovation because without those restraints Intuitive would earn lower profits and thus be unable to cover the costs of investments in innovation.<sup>633</sup> This argument is flawed as an economic matter, for several reasons.

324. To begin with, Dr. Smith’s argument largely ignores the reality that we already have a system that is designed to deal with concerns that competitive markets might produce profits from innovation that create insufficient incentives to invest in creating such innovations. That system is called intellectual property (IP) protection, and it reflects a determination of which innovations require such protection from competition and how far and long that patent protection should extend. Intuitive already enjoys IP protection on its products, which give it whatever supracompetitive profits are ordinarily provided by that IP protection. Dr. Smith’s argument that the challenged restraints were needed to encourage Intuitive to invest in innovation thus requires, at a minimum, a showing that this ordinary IP reward was insufficient to incentivize efficient Intuitive investments in innovation.

325. Confirming the point that his argument necessarily requires a showing that the ordinary IP reward is insufficient is the fact that, although Dr. Smith lists protecting proprietary IP information as a potential procompetitive justification for tying,<sup>634</sup> he never offers any argument or evidence to suggest that this justification applies to the challenged restraints.<sup>635</sup> Nor did Intuitive’s contention interrogatories list protecting IP rights as one of the claimed procompetitive justifications for its restraints on rival EndoWrist repair or da Vinci servicing.<sup>636</sup> In short, neither Dr. Smith nor Intuitive claim that the challenged restraints were needed to obtain the ordinary IP reward provided by ordinary IP protection.

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<sup>633</sup> See Smith Report at pp.8-9, ¶¶ 212, 214, 217-219. This claimed procompetitive justification is a necessary premise for Dr. Smith’s related argument that EndoWrist repair rivals and da Vinci servicing rivals are merely free riding on profits to which Intuitive is entitled. See *supra* Section IV.B.1. Other problems with that free-riding claim are also discussed above. See *id.*

<sup>634</sup> Smith Report ¶ 185.

<sup>635</sup> Smith Report ¶ 185.

<sup>636</sup> Elhauge Report ¶ 376 & n.904.

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326. Thus, the argument by Dr. Smith and Intuitive that the challenged restraints were needed to encourage investment in innovation necessarily rests on the claim that the challenged restraints produce significantly higher profits than would Intuitive's IP protection alone and that those additional IP profits were necessary to induce Intuitive to make efficient investments in innovation. But Dr. Smith provides no economic theory or evidence to support such a claim, and his claim conflicts with both economic theory and the economic evidence in this case. Nor does he show that any alleged procompetitive effects outweighed the anticompetitive economic harm. The following elaborates on each of these points.

### *1. Economic Theory*

327. As a matter of economic theory, Dr. Smith's claim has several problems.

#### **i. Dr. Smith's Unsupported Assumption That the Current U.S. IP Protection Regime Is Sub-Optimal**

328. Dr. Smith's claim necessarily relies on an unsupported assumption that the current scope of IP protection has not been designed to produce the economically optimal level of innovation investments, which requires trading off the benefits of any incentivized innovation against the costs of limiting the competitive distribution of that innovation. If current IP protection has been designed to optimize innovation investments, then expanding the exclusion of competition beyond what IP protection provides (by adding anticompetitive restraints) will produce a suboptimal level of protection.<sup>637</sup> I explained this theoretical point in my initial report,<sup>638</sup> and Dr. Smith never disputes it.

329. Thus, Dr. Smith's claimed justification requires (among other things) showing that current IP protection is insufficient to incentivize optimal investment. Yet the closest thing that Dr. Smith makes to an argument that IP law might be economically suboptimal is when, in response to the point that his argument that rivals can free ride on innovation investments applies only without IP protection, he observes in a footnote that: "Even with protection, IP litigation can be costly to the innovator (in financial terms and with respect to time), and the use of the IP by the third party may

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<sup>637</sup> Elhauge, *Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory*, 123 HARVARD LAW REVIEW 397, 439-442 (2009); Elhauge & Krueger, *Solving the Patent Settlement Puzzle*, 91 TEXAS LAW REVIEW 283, 294-95 (2012); Elhauge, *Rehabilitating Jefferson Parish: Why Ties Without a Substantial Foreclosure Share Should Not Be Per Se Legal*, 80 ANTITRUST LAW JOURNAL 463, 510-514 (2016).

<sup>638</sup> See Elhauge Report ¶ 387.

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have already cause [sic] irreparable harm.”<sup>639</sup> But all that observation shows is that, like any legal right, IP protection has procedural costs and possible remedial limitations. Because optimizing IP protection requires optimizing the overdeterrence and underdeterrence created by IP law, optimal IP protection would necessarily take such procedural costs and remedial limitations into account. Thus, these procedural arguments by Dr. Smith likewise require an unsupported assumption that IP protection has not been designed optimally.

330. Moreover, Dr. Smith fails to consider that the procedural issues he cites have economic effects on both sides that could undermine any claim that they indicate systematic underenforcement. (a) He fails to consider that IP litigation can be costly not only to patent holders, but also to patent infringers. If anything, economics would predict that IP litigation costs are more likely to lead to underdeterrence than overdeterrence because it is easier to fund such litigation costs out of the monopoly profits earned with IP protection than out of the lower-competitive profits a rival makes by defeating IP protection. (b) He also fails to consider that deterring third party competition can also inflict irreparable harm on third parties and buyers and that preliminary injunctions are available to address and weigh possibly conflicting claims of irreparable harm.

331. Further, Dr. Smith’s argument that litigation costs and the possibility of irreparable harm necessarily mean there is underenforcement of IP rights raises an internal paradox because enforcing antitrust laws also involves litigation costs and the possibility of irreparable harm. Thus, his argument would both (a) imply that IP protection is underenforced in a way that counsels for allowing Intuitive’s challenged restraints and (b) imply that antitrust laws are underenforced in a way that counsels for prohibition of those challenged restraints. This internal paradox not only indicates that his argument is not economically valid, but also that (even if economically valid) his argument would not cut one way or the other.

## **ii. Dr. Smith’s Unsupported Assumption That It Would Be Socially Optimal for Firms to Impose Their Own Private Extension of IP Rights**

332. Even if IP protection were insufficient to incentivize optimal innovation investments, Dr. Smith’s claim also rests on an unsupported assumption that innovation incentives would be more optimal if firms with IP rights were able to set the scope of their protection from competition for themselves by imposing private restraints that exclude competition by more than would IP rights. That does not

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<sup>639</sup> Smith Report ¶ 214 & n.534.



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follow. If firms were allowed to set the scope of their own protection from competition, they would have incentives to do so in a way that goes beyond whatever optimizes innovation and instead choose whatever scope maximizes their own profits. In other words, even if current IP protection produces suboptimal innovation, the results could be even further from the optimum if self-interested firms were able to set the scope of their protection from competition for themselves. Indeed, if anything, economics indicates that this is likely because current IP protection, even if imperfect, is set by financially disinterested actors that have no affirmative incentive to deviate from the optimum, whereas self-interested firms have affirmative incentives to set the scope of their protection at the highest level that maximizing their profits, however far from the optimum that would be.

### **iii. Dr. Smith's Unsupported Assertion That Suppressing Competition Always Increases Investment in Innovation**

333. Dr. Smith's claim that suppressing competition necessarily encourages more investments in innovation conflicts with the economic literature, which instead finds that sometimes competition can spur greater investments in innovation.<sup>640</sup> The reasons are straightforward. The total gains from innovation are the per-unit benefit from that innovation times the market output. Because a monopoly has lower output than a competitive market, that means any innovation that produces a given per-unit gain results in lower total gain. Further, a monopolist gains less from innovation because any monopoly profits that result from that innovation in part replace monopoly profits it was already earning. Finally, competition gives firms a strong incentive to invest in innovation to avoid losing sales to rivals who might offer a cheaper or better product, perhaps through their own innovations. Economic theory thus indicates that greater competition could spur more innovation. This economic theory is confirmed by empirical studies, which show that competitive markets create more innovation than monopoly markets.<sup>641</sup>

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<sup>640</sup> See JEAN TIROLE, THE THEORY OF INDUSTRIAL ORGANIZATION 390-96 (1988); W. KIP VISCUSI, JOHN M. VERNON & JOSEPH E. HARRINGTON, JR., ECONOMICS OF REGULATION AND ANTITRUST 834-37 (2d ed. 1995); Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources to Invention*, in ESSAYS IN THE THEORY OF RISK-BEARING 144 (1971).

<sup>641</sup> See Juan A. Correa and Carmine Ornaghi, *Competition & Innovation: Evidence from U.S. Patent and Productivity Data*, THE JOURNAL OF INDUSTRIAL ECONOMICS, June 2014, Vol. 62(2), at 263 ("The results presented in this paper suggest that, in an economy with strong protection of intellectual property rights, like that of the United States, competition substantially increases innovation and productivity growth."); *id.* at 260 ("The overall message of this literature [looking at exogenous changes in competition] is that competition leads (almost unequivocally) to

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334. Indeed, elsewhere in his analysis, Dr. Smith argues that Intuitive’s investments in innovation were actually spurred by “competition with laparoscopic and open surgery,”<sup>642</sup> and that its investments in the Extended Use program innovation were a response to “competition with laparoscopic surgery.”<sup>643</sup> Dr. Smith even states that all of “Intuitive’s significant ongoing investments . . . would be wholly unnecessary if Intuitive was not engaged in significant competition with laparoscopic and open surgery.”<sup>644</sup> Thus, Dr. Smith himself recognizes that greater competition can spur, rather than discourage, investments in innovation, and indeed does so in this very market. But this position is internally inconsistent with his analysis of procompetitive justifications, which assumes the opposite. Moreover, any competitive pressure from laparoscopic and open surgery would have been equally present in a but-for world without the challenged restraints. Thus, if he is right such competitive pressure from laparoscopic and open surgery is what spurred all of Intuitive’s investments in innovation, that necessarily means that the challenged restraints could not have been needed to encourage those investments.<sup>645</sup>

## 2. Empirical Economic Evidence

335. As for the economic evidence, as noted above, Dr. Smith’s argument necessarily rests on the empirical premises that: (1) the challenged restraints produce significantly higher profits than would Intuitive’s IP protection alone; (2) those additional profits were necessary to induce Intuitive to make efficient investments in innovation; and (3) greater competition would not create even higher incentives

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aggregate productivity growth through reallocation of production from less to more efficient firms and improvements within firms.”); PHILLIP AREEDA & LOUIS KAPLOW, *ANTITRUST ANALYSIS* 25-26 (8th ed. 2022) (“as firm size increases . . . the number of innovations increases more slowly, and the focus of innovation shifts toward process innovations that can be exploited internally” and “innovation is maximized as intermediate levels of concentration. In other words, innovation as a function of concentration is an ‘inverted U.’”)

<sup>642</sup> See Smith Report ¶ 134.

<sup>643</sup> See Smith Report ¶ 205.

<sup>644</sup> Smith Report ¶ 134.

<sup>645</sup> Cutting against Dr. Smith’s assertion that competition with laparoscopic and open surgery was what spurred all of Intuitive’s investments in innovation is the fact that the share of surgeries that were laparoscopic or open decreased from 2008 to 2017, see Elhauge Report ¶ 91 & Figure 8, and from 2012 to 2017, see Smith Report ¶ 120 & Figure 1. This coincided with a period during which Intuitive’s annual R&D spending increased from \$79 million in 2008 to \$170 million in 2012 to \$671 million. See Smith’s Public Data Workpaper at Chart Data Tab. Thus, whatever was causing this rise in Intuitive’s annual R&D spending, it does not appear to have been greater competition from laparoscopic and open surgery.

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to invest in innovation by increasing the gains from doing so and the risks from not doing.

### **i. The Challenged Restraints Increased Intuitive's Profits**

336. The first empirical premise—that the challenged restraints produce higher profits than would Intuitive's IP protection alone—is certainly true, as established throughout my reports. Indeed, Intuitive would have no economic incentive to adopt those challenged restraints if they did not increase its profits above but-for levels. But this empirical premise necessarily conflicts with Dr. Smith's claims elsewhere in his analysis that, without the challenged restraints, Intuitive's market share would remain near 100% (because rivals would only have a minimal market share) and charge the same or higher prices.<sup>646</sup> His procompetitive justification claim thus necessarily conflicts with his claim regarding the absence of anticompetitive effects.<sup>647</sup>

### **ii. Dr. Smith Has No Empirical Support for His Premise That the Challenged Restraints Were Necessary to Induce Intuitive To Make Efficient Investments in Innovation**

337. Dr. Smith's second empirical premise—that the additional profits generated by the challenged restraints were necessary to induce Intuitive to make efficient investments in innovation—has no empirical support. As I pointed out in my initial report, there is no evidence that without the challenged restraints Intuitive could not have continued its innovation investments and still had profits that were positive and quite large.<sup>648</sup> Dr. Smith does not dispute this or try to provide any evidence that the additional profits created by Intuitive's challenged restraints were needed to cover the costs of its investments. His argument on this score instead consists of simply asserting over and over again that this is true, without providing any concrete evidence to think so.<sup>649</sup>

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<sup>646</sup> See *supra* Section V.B.4.

<sup>647</sup> My position, in contrast, is entirely consistent: namely that the challenged restraints do increase prices and profits beyond the but-for levels that IP protection would otherwise produce (thus establishing anticompetitive economic harm) and that there is no proof those additional profits are necessary to encourage optimal investment in innovation (thus refuting this claimed procompetitive justification).

<sup>648</sup> See Elhauge Report ¶ 388.

<sup>649</sup> See Smith Report at pp.8-9, ¶¶ 212, 214, 217-219.

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338. Moreover, Dr. Smith's empirical premise affirmatively conflicts with the data. As my initial report showed, without Intuitive's anticompetitive restraints its economic profit margins for EndoWrists and da Vinci servicing would have dropped but still been very high, at least 65% for EndoWrists and at least 76% for da Vinci servicing.<sup>650</sup> Further, my analysis provides no basis to think that the but-for economic profit margin for da Vinci robots would be any lower than their current profit margin, which between 2017 and 2020 was 60-67%.<sup>651</sup> Dr. Smith does not dispute that Intuitive's but-for profit margins would be at least that high if my predictions about the but-for world are correct. Indeed, although he does dispute my but-for predictions, his disagreements are all in the direction of arguing for but-for predictions of lower rival sales and higher market prices that would make Intuitive's but-for profit margins even higher.<sup>652</sup> In short, even if one accepted Dr. Smith's critiques, his analysis would indicate that Intuitive's but-for profit margins would be even higher than I estimated.

339. Dr. Smith provides no empirical evidence or economic theory to show that the economic profit margins of at least 60-76% that Intuitive would have earned without its challenged restraints would not have sufficed to induce Intuitive to have maintained its investments in innovation. Indeed, the only empirical evidence that he cites on Intuitive's innovation investments indicates that R&D expenditures increased from 7-9% of revenue between 2005-2016 to 12% of revenue in 2021.<sup>653</sup> His backup data indicates that, during the period starting in 2017 when I posit greater but-for competition could have occurred without the challenged restraints,<sup>654</sup> R&D expenditures ranged from 10.5-13.7%.<sup>655</sup> But-for economic profit margins that equal 60-76% of revenue could not rationally have been insufficient to incentivize investments that equaled only 7-14% of revenue. Accordingly, the fact that during this time the challenged restraints increased Intuitive's profit margins from 65% to 72-75% for EndoWrists and from 76% to 82-84% for da Vinci servicing could not rationally have been necessary to induce Intuitive to make the investments in innovation that they made. This thus disproves Dr. Smith's empirical claim that those challenged restraints were necessary to encourage Intuitive's investments in innovation.

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<sup>650</sup> See Elhauge Report ¶ 388 & n.933.

<sup>651</sup> See Elhauge Report ¶ 130.

<sup>652</sup> See Smith Report ¶¶ 236-269.

<sup>653</sup> See Smith Report ¶ 218.

<sup>654</sup> Elhauge Report ¶¶ 398, 416.

<sup>655</sup> See Smith's Public Data Workpaper at Chart Data Tab.

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340. Smith argues that Intuitive’s investment decisions had to also consider the risk that they might not work out.<sup>656</sup> However, he does not provide any evidence of what the risk level was or show that it would have been too high to induce investment without the additional profits created by the challenged restraints.

341. Moreover, Dr. Smith’s backup data indicates that the percentage of revenue spent on R&D was far lower for Intuitive than for its MIST surgery robot rival TransEnterix, both if we compare their 2017-2021 spending or if we compare their R&D spending during their respective early years around entry.<sup>657</sup> Yet TransEnterix does not restrain its robot buyers from buying instruments or servicing from third parties, as Dr. Smith and I both found.<sup>658</sup> Likewise, Dr. Smith’s backup data indicates that from 2005-2021 the percentage of revenue spent on R&D was lower for Intuitive than for medical device firms Accuray, Johnson & Johnson, and MicroPoint Scientific in every year in which they existed, with the sole exception being that Accuray was 1.1% lower in 2020.<sup>659</sup> Dr. Smith found each of those three firms to be relevant comparators because they were either mentioned in Intuitive’s 10-K or in an IBISWorld report on “Robotic Surgery Equipment Manufacturing.”<sup>660</sup> Yet Dr. Smith makes no claim that those three firms impose tying restraints similar to Intuitive’s. Nor does Dr. Smith offer any evidence that the investment risk levels were lower for any of these other companies than for Intuitive, a claim that would be particularly implausible for TransEnterix, given that Intuitive is making continuing investments in an established monopoly, while TransEnterix is making investments to try to successfully enter and compete with an entrenched monopolist. These comparisons to other companies undermine Dr. Smith’s claim that Intuitive’s challenged restraints were necessary to encourage its investments in innovation.

342. The data on the effects of rival competition on Intuitive’s R&D spending conflict with both the second and third empirical premises needed to establish Dr. Smith’s claimed procompetitive justification. Dr. Smith’s argument necessarily depends on the premise that competition with rivals that repaired/reset EndoWrists would reduce Intuitive’s investments in innovation.<sup>661</sup> Yet, when such rivals actually entered and the competed in the market from 2018-2020,<sup>662</sup> Dr. Smith’s own

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<sup>656</sup> Smith Report ¶ 179.

<sup>657</sup> See Smith’s Public Data Workpaper at Chart Data Tab.

<sup>658</sup> See Elhauge Report ¶ 219; Smith Report ¶ 94.

<sup>659</sup> See Smith’s Public Data Workpaper at Chart Data Tab.

<sup>660</sup> See Smith Report n.546.

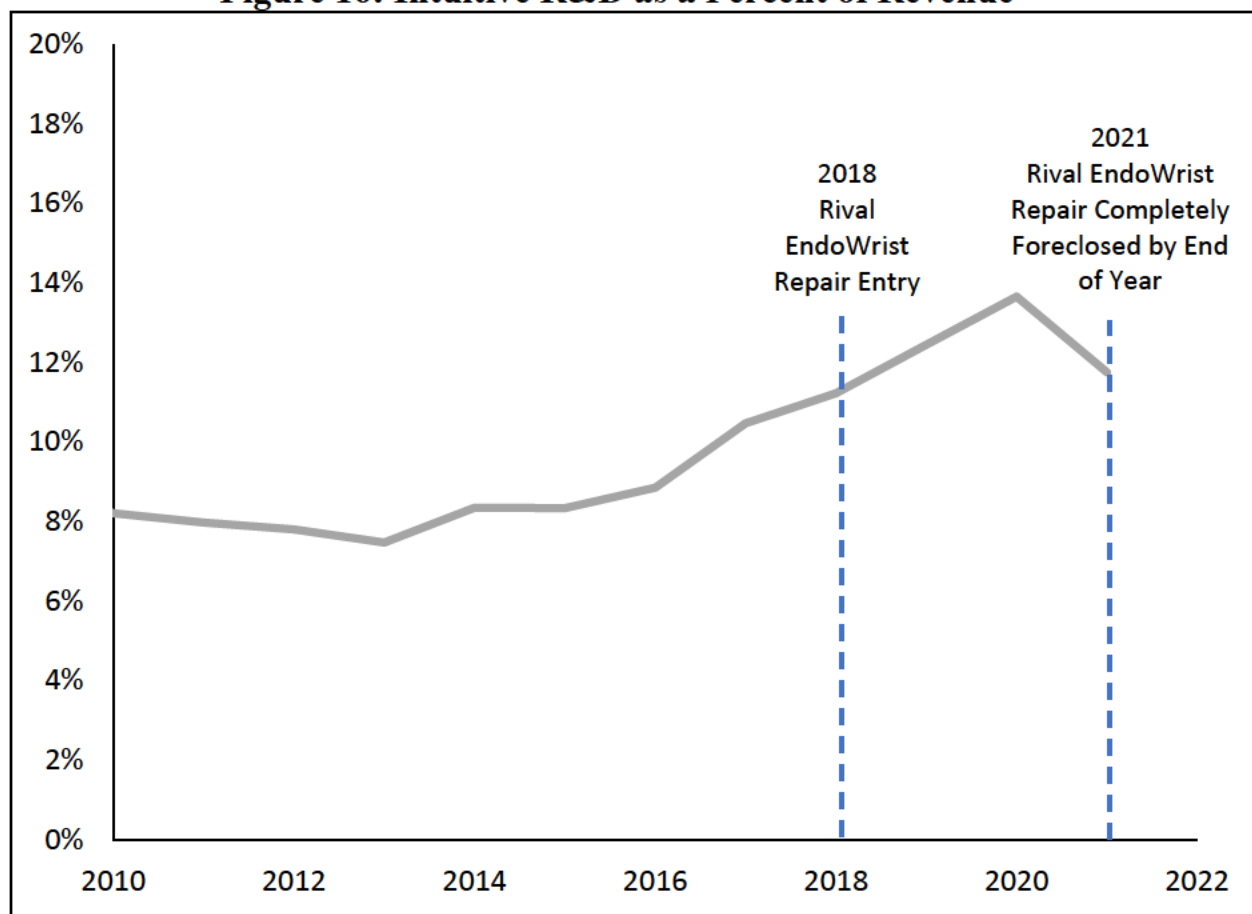
<sup>661</sup> See, e.g., Smith Report ¶ 212 (“allowing third-parties to reset EndoWrist instruments....also may dampen Intuitive’s incentives to continue investment in improvements.”).

<sup>662</sup> Elhauge Report ¶ 179 & Table 2.

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data instead indicates that the percentage of revenue that Intuitive spent on R&D rose steadily, from 10.5% in 2017, 11.2% in 2018, 12.4% in 2019, and 13.7% in 2020.<sup>663</sup> Further, when Intuitive successfully drove out the rivals that repaired/reset EndoWrists in 2021, Intuitive's spending on R&D went back down to 11.8%.<sup>664</sup> In short, contrary to Dr. Smith's empirical premise, the data shows that greater competition with rivals *increased* Intuitive's investments in innovation and decreased competition with rivals decreased those investments, the precise opposite of what Dr. Smith asserts. The following figure illustrates the results. This empirical finding fits the economic theory indicating that greater competition can spur greater investments in innovation.

**Figure 16: Intuitive R&D as a Percent of Revenue<sup>665</sup>**



<sup>663</sup> See Smith Report Public Data Workpaper at Chart Data Tab.

<sup>664</sup> *Id.*

<sup>665</sup> Intuitive Income from 10-Ks v1, based in Intuitive Surgical Form 10-K FY2010-2021.



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**iii. Dr. Smith's Assertion That Competition Reduces Innovation Is Contradicted by Empirical Evidence in This Case**

343. Evidence on the nature and timing of Intuitive's innovations also conflicts with both the second and thirds empirical premise needed to establish Dr. Smith's claimed procompetitive justification. Dr. Smith describes only four areas of innovation for Intuitive since the 1990s.<sup>666</sup> The first is four new robot generations, the last of which he puts as occurring in 2014.<sup>667</sup> Given its timing, those robot innovations could not have been affected had rivals been able, as posited in my but-for analysis, to start entering the EndoWrist repair market in 2017-2018 and the da Vinci servicing market in 2017-2019.<sup>668</sup> The second is the development of new instruments, the only example of which he gives is an instrument that was part of the 2014 Xi launch.<sup>669</sup> The third is improving the material of instruments to increase their durability, but that was done as part of the Extended Use program.<sup>670</sup> The fourth is that Intuitive developed different financing arrangements, such as leasing and usage-based pricing.<sup>671</sup> But those are well-known methods of pricing that are hardly innovations, let alone product innovations that require significant R&D spending that required funding by the substantial additional profits generated by the challenged restraints.

344. In short, the only new Intuitive product innovation that Dr. Smith describes that could have been affected by the suppression of but-for entry since 2017 is the Extended Use Program. However, as both Dr. Smith and I agree, Intuitive adopted the Extended Use program as a way to lower the per-use price in response to **competitive** pressure.<sup>672</sup> To be sure, Dr. Smith claims that the competition to which the Extended Use Program responded was from traditional laparoscopy, rather than

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<sup>666</sup> Smith Report ¶ 28.

<sup>667</sup> Smith Report ¶ 28. In a footnote, Dr. Smith notes that Intuitive also launched the da Vinci X in 2017 and the da Vinci SP in 2018, but he does not claim they were innovations. *Id.* at n.57. Presumably that is because they are more limited version of the Xi that did not require new innovation. Elhauge Report ¶ 33.

<sup>668</sup> Elhauge Report ¶¶ 398, 416.

<sup>669</sup> Smith Report ¶ 28 & n. 58; "Da Vinci Xi Single-Site Technology: Solutions for Single-Incision Surgery," Intuitive Surgical at p.7, accessed February 14, 2023, <https://www.intuitive.com/en-us/-/media/Project/Intuitive-surgical/files/pdf/1025290ra-isi-brochure-single-site-digital-low-res-394110.pdf?la=en&hash=F24EC0B5DB9C62BDD688F77409A3CA50>

<sup>670</sup> Smith Report ¶ 28 & n. 59; Intuitive 2020 Sustainability Report at p. 12, accessed February 14, 2023, <https://isrg.gcs-web.com/static-files/15edd98b-4896-4bd7-a3b4-e2f095a61a61>.

<sup>671</sup> Smith Report ¶ 225b.

<sup>672</sup> Elhauge Report ¶¶ 342-43, 360; Smith Report ¶¶ 205, 220 & nn. 644-645 & Figure 3.

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from entrants into the EndoWrist repair and replacement market.<sup>673</sup> But his claim seems inconsistent with the program's timing. After all, he himself claims that da Vinci robots have faced competition from traditional laparoscopy from the beginning when they were introduced in 1998-99,<sup>674</sup> and the share of surgeries done laparoscopically was decreasing from steadily from 2014-2020,<sup>675</sup> so his claim does not seem consistent with the 2020 timing of this program rollout. In contrast, the 2020 timing is more consistent with the timing of entry into the EndoWrist repair market, which first occurred in the United States in 2018 and was ramping up in 2019 before it was squelched in 2020 and thereafter.<sup>676</sup> But even if he were right that the Extended Use Program was introduced in response to competition from traditional laparoscopy, the fact remains that he admits that the only post-2017 Intuitive product innovation that he identifies resulted from competitive pressure, not because a suppression of competition from EndoWrist repair rivals increased profits in a way needed to fund that innovation. This refutes his procompetitive justification. Moreover, competitive pressure from traditional laparoscopy would have existed even in a but-for world without the challenged restraints, so if he is right that laparoscopic competition is what induced the Extended Use Program, that necessarily means the challenged restraints were not what induced that program. Indeed, the fact that the Extended Use Program was a response to competitive pressure (whatever the actual source) indicates that in a but-for world with more competitive pressure (given but-for rival repair competition) the program would have occurred earlier, so that the challenged restraints affirmatively delayed the only post-2017 Intuitive product innovation that Dr. Smith identifies.<sup>677</sup>

*3. No Evidence that Any Alleged Procompetitive Benefits Exceeded the Anticompetitive Economic Harm*

345. Even if Dr. Smith had shown that the challenged restraints were necessary to achieve the alleged procompetitive benefit of encouraging some of Intuitive's investments in innovation, Dr. Smith never offers any evidence showing the extent to which any resulting incremental improvements in innovation produced incremental benefits to buyers. Nor does he offer any evidence showing that the resulting incremental benefits to buyers exceeded the anticompetitive economic harms imposed on buyers by the challenged restraints. In short, he provides no

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<sup>673</sup> *Id.* ¶ 205.

<sup>674</sup> *See supra* Section II.A.1.ii.

<sup>675</sup> *See* Smith Report ¶120 & Figure 1.

<sup>676</sup> *See* Elhauge Report ¶ 179 & Table 2.

<sup>677</sup> *See supra* Section V.C; *infra* Section VII.C.5; Elhauge Report ¶¶ 360-362.

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evidence to quantify the procompetitive benefits or to show that they outweighed the anticompetitive economic harms.

346. The apparent reason that Dr. Smith never addresses this issue is that he has adopts the mistaken theoretical assumption that any procompetitive effect justifies a restraint, no matter how large the anticompetitive economic harm and how weak the procompetitive effect.<sup>678</sup> He cites no literature to support his theoretical assumption, which conflicts with standard antitrust economics.

347. To the extent Dr. Smith does provide evidence that is relevant to this issue, it indicates it is affirmatively unlikely that any incremental innovation benefits exceeded the anticompetitive economic harm. After all, the only post-2017 Intuitive product innovation that Dr. Smith identifies is the 2020 Extended Use Program. Even if we incorrectly think that the challenged restraints were necessary to encourage the 2020 Extended Use program, those benefits would have to be weighed against the anticompetitive economic harms, which include not only higher prices and lower output, suppressed use limits, lost buyer choice, and higher environmental costs, but also the harm that Intuitive would have extended use limits earlier and on more instruments without the challenged restraints.<sup>679</sup> Even leaving aside the first four harms, the net innovation effects are clearly harmful. Moreover, one of the other four anticompetitive economic harms is that the challenged restraints suppressed use limits, so that in a but-for world without those restraints, the use limits would have been higher than under the Extended Use program.<sup>680</sup> Thus, even limiting our analysis to the effect on use limits, buyers suffered anticompetitive economic harm from the combination of the suppressed use limits and the Extended Use program, even if both were encouraged by the challenged restraints.<sup>681</sup> The net anticompetitive economic harm becomes even greater once one adds in the effects of higher prices, lower output, lost buyer choice, and higher environmental costs.

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<sup>678</sup> Smith Report ¶181 (“Intuitive’s conduct has procompetitive business rationales. Hence, irrespective of any competitive harms, . . . Intuitive’s challenged conduct is justified as a matter of economics.”).

<sup>679</sup> See *supra* Section V; Elhauge Report ¶¶ 332-368.

<sup>680</sup> Elhauge Report ¶¶ 340-344, 358-363.

<sup>681</sup> Elhauge Report ¶¶ 403-408.

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***B. The Restraints Did Not Enable Intuitive to Offer Superior Financial Terms******1. Dr. Smith’s Own Logic and the Evidence in This Case Shows That the Challenged Conduct Raised Prices***

348. Dr. Smith claims that “the challenged restraints enable Intuitive to offer superior financial terms that lower costs and increase access...for healthcare providers.”<sup>682</sup> However, as shown in my initial report, the challenged conduct raised (not lowered) prices to hospitals.<sup>683</sup> As further showed above in Sections II.B and V.B, Dr. Smith’s various attempts to contest that evidence are economically flawed and baseless. Thus, even if one incorrectly thought that the challenged restraints **enabled** Intuitive to offer superior financial terms that lowered prices, the **actual** effect of those restraints was to raise prices. Indeed, Dr. Smith’s lead procompetitive justification—that the challenged restraints enabled Intuitive to invest in innovation by preventing competition that would lower Intuitive’s profits—depends on a premise that those restraints raised prices.<sup>684</sup> His argument here is thus, once again, internally inconsistent.

349. Nor does Dr. Smith offer any empirical evidence that the challenged restraints enabled Intuitive to offer superior financial terms than it could not have offered without those restraints. He does offer some theoretical arguments, but they either do not support his claim or are based on a mischaracterization of the economic literature.

***2. Dr. Smith’s Claims Are Not Supported by the Academic Articles He Cites***

350. Dr. Smith argues that: “Academic research has shown that the bundling of goods, including complementary goods, can lead to lower prices”.<sup>685</sup> But the fact that academic research shows that tying complementary goods “can” lower prices does not mean it always does so, and there is copious academic research showing how tying goods, including complementary goods, predictably raises prices.<sup>686</sup>

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<sup>682</sup> Smith Report ¶222.

<sup>683</sup> Elhauge Report ¶¶ 130-132, 187-189, 234-236, 334, 351-353, 394-397, 412-414.

<sup>684</sup> See *supra* Section VI.A.

<sup>685</sup> Smith Report ¶223.

<sup>686</sup> See, e.g., EINER ELHAUGE, UNITED STATES ANTITRUST LAW AND ECONOMICS 464-472 (4<sup>th</sup> ed. 2022) (collecting academic literature).

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**i. Articles Cited by Dr. Smith Indicate That Bundling Can Generate Anticompetitive Harm and Would Do So Under the Circumstances of This Case**

351. The main article by Prof. Kobayashi on which Dr. Smith relies for this proposition affirmatively acknowledges, “the literature has demonstrated the possibility that bundling can generate anticompetitive harm.”<sup>687</sup> The other article by Prof. Estelami on which Dr. Smith relies states consumers “may at times pay significantly higher prices by purchasing the bundle, rather than buying the bundle items individually,” and that “Sellers’ ability to demand surcharges in product bundles may be especially true in the context of complementary bundles.”<sup>688</sup> Moreover, Prof. Estelami’s finding that bundles can lower prices is limited to the proposition that bundled discounts (a.k.a. mixed bundling) often lowers consumer prices relative to the actual standalone prices charged by the firm.<sup>689</sup> That finding is not relevant here because this case involved pure bundling (i.e. absolute tying), rather than bundled discounts, and because the issue here is whether the actual prices were below but-for prices, not whether they were below actual standalone prices. Actual standalone prices exceed but-for prices because bundling firms have an incentive to raise standalone pricing above but-for levels, for at least two reasons. First, as an article Dr. Smith relies on shows, offering a bundled discount makes it profit-maximizing for a firm to raise standalone prices even without foreclosure or price discrimination.<sup>690</sup> Second, firms have incentives to raise the standalone price as a penalty for refusing the bundle, so that their bundled discounts can achieve

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<sup>687</sup> Bruce Kobayashi, *Does Economics Provide a Reliable Guide to Regulating Commodity Bundling by Firms? A Survey of the Economic Literature*, 1 JOURNAL OF COMPETITION LAW AND ECONOMICS 707, at 707 (2007), cited in Smith Report n.556. He also claims only that the bundling of complementary goods “could” or “can” lower prices, not that it always or usually does so. *Id.* at 714. Other pages of this article cited by Dr. Smith in his n.556 for how bundling can lower prices are focused on bundled discounts (a.k.a. mixed bundling) rather than the sort of pure bundling (i.e. absolute tying) we have in this case. *Id.* at 708-710, 738-39. *See also id.* at 710-711 (defining the distinction between mixed bundling and pure bundling).

<sup>688</sup> Hooman Estelami, “Consumer Savings in Complementary Product Bundles,” 7 *Journal of Marketing Theory and Practice* 107, 107-108 (1999). *See also id.* at 109 (“that sellers may be able to charge additional amounts for providing a bundle consisting of products which complement one another. . . . For all the above reasons, complementary bundles may allow sellers to provide no bundle savings, or even allow them to charge a premium. . . .”)

<sup>689</sup> Estelami, *supra* note 688, at 110 (“The analysis was limited to mixed bundles - those for which the individual bundle items were also available for sale on their own...”); *id.* at 107 (distinguishing between pure bundling and mixed bundling).

<sup>690</sup> 56 Jay Pil Choi, *Mergers with Bundling in Complementary Markets*, JOURNAL OF INDUSTRIAL ECONOMICS, 553, 555, 563-565, 568 (2008), cited in Smith Report n.558.



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foreclosure and price discrimination effects similar to those created by absolute tying.<sup>691</sup>

352. It is telling that the example of complementary goods that Dr. Smith gives is of automobiles and gasoline, which are plainly not bundled. If bundling automobiles and gasoline were efficient, one would expect firms to enter into both businesses and sell them in a bundle. Thus, his own example of complementary goods confirms that bundling complementary goods is not always efficient. Nor does Dr. Smith provide any evidence that the actual bundle in this case lowered prices.

**ii. Articles Cited by Dr. Smith Not Only Do Not Predict That Bundling in This Case Will Necessarily Lower Prices, But Actually Support the Opposite Conclusion**

353. In his next paragraph Dr. Smith moves from the proposition that bundling “can” lower prices to a more sweeping claim that it necessarily does so, asserting that: “Economic principles lead to the prediction that the price of a bundle of complementary goods is lower than the sum of the prices when the goods are sold separately by two different suppliers,” citing in support an article by Professor Jay Choi.<sup>692</sup> However, this assertion is not only irrelevant to the situation at issue in this case, but also relies on a false characterization of Professor Choi’s article.

354. The assertion is irrelevant because Dr. Smith is not describing the benefits of bundling but rather the benefit of merging two firms that sell complementary products. This benefit results because the merger internalizes externalities, not because the merged firm forces customers to buy both products from one supplier.<sup>693</sup> Intuitive already sells both products, so it enjoys the benefits of internalizing these externalities regardless of whether it imposes the challenged conduct or not. Once a firm already sells two products, a decision to bundle those products does not have that benefit and can instead raise prices relative to a but-for world where the firm sells the two products separately. Indeed, although the Choi article on which Dr. Smith relies finds that a merger of two firms that make complementary goods can result in bundled pricing that is lower than pre-merger prices under certain limited market conditions, the Choi article affirmatively finds that consumer welfare would

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<sup>691</sup> Elhauge, *Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory*, 123 HARVARD LAW REVIEW 397, 450-459 (2009).

<sup>692</sup> Smith Report ¶224.

<sup>693</sup> 56 Jay Pil Choi, *Mergers with Bundling in Complementary Markets*, JOURNAL OF INDUSTRIAL ECONOMICS, 553, 555 (2008) (“...the merged entity can ‘internalize’ these ‘price externalities’ arising from the complementarity”), cited in Smith Report n.558.



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always be higher if the merged firm were *prohibited* from bundling.<sup>694</sup> Because the relevant issue in this case is whether Intuitive should be prohibited from bundling, the Choi article thus cuts in precisely the opposite direction from the conclusion Dr. Smith attempts to draw from it.

355. The Choi article result that a merger that results in mixed bundling could lower prices under certain limited market conditions also does not apply to this case because this case involves neither mixed bundling nor those market conditions. Other results in the Choi article make clear that the opposite conclusion follows if one instead has either the sort of bundling or market conditions that exist in this case.

356. Professor Choi clearly defines “mixed bundling” to be selling two products both on their own at standalone pricing and together with a bundled discount.<sup>695</sup> He defines “pure bundling” to exist when “the firm only sells the bundle and it does not make the individual components available separately.”<sup>696</sup> The challenged restraints here clearly involve pure bundling, not mixed bundling.<sup>697</sup> Choi clearly limits his finding that a merger can result in lower bundled prices to “mixed bundling.”<sup>698</sup> Indeed, he affirmatively finds that a firm will find “pure bundling” profitable only if it allows an exclusion of rivals that would not otherwise be possible.<sup>699</sup> In short, far from providing a procompetitive justification for the sort of pure bundling that Intuitive has engaged in, Choi affirmatively finds it is anticompetitive. Dr. Smith is

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<sup>694</sup> Choi, *supra* note 693, at 571 (“we can consider a policy prescription in which the merged entity is prohibited from engaging in mixed bundling and allowed only to sell individual components as a condition for merger. Indeed, it can be shown that consumer surplus is always higher with such a prohibition in my model.”)

<sup>695</sup> Choi, *supra* note 693, at 554 (“Under ‘mixed bundling,’ the firm sells the individual components separately as well as selling the bundle (but the bundle is offered at a discount to the sum of the stand-alone prices).”)

<sup>696</sup> Choi, *supra* note 693, at 554.

<sup>697</sup> Dr. Smith and I agree on this point. See Elhauge Report ¶¶ 242-260; Smith Report ¶ 84; *supra* Section IV.A.

<sup>698</sup> Choi, *supra* note 693, at 555 (“this paper develops a model of mergers that allows mixed bundling.”); *id.* at 562 (“Proposition 1. Mixed bundling following the merger has the following implications for prices. First, the price of the bundle post-merger is lower than the sum of the pre-merger component prices.”)

<sup>699</sup> Choi, *supra* note 693, at 555 (“Until now, I have analyzed only the possibility of mixed bundling after a merger between complementary producers... I consider another type of practice known as pure bundling. . . . [F]or most parameter values, pure bundling is less profitable than mixed bundling for the merged entity. . . . However, . . . pure bundling can be still profitable if the exclusion of rivals through predation is possible with pure bundling, but not with mixed bundling.”)

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thus entirely incorrect to claim this article’s finding about mixed bundling supports his conclusion about Intuitive’s bundle.<sup>700</sup> The opposite is true.

357. Moreover, Professor Choi’s conclusion about mixed bundling was limited to certain market conditions that do not apply here. In particular, that conclusion assumes “the **absence** of foreclosure.”<sup>701</sup> Indeed, his article finds that if there is foreclosure, both social welfare and consumer welfare are unambiguously harmed.<sup>702</sup> He finds that is particularly true where the foreclosure results in the exit of rivals.<sup>703</sup> In this case, we not only have foreclosure, but the worst sort of foreclosure that drives out rivals altogether.<sup>704</sup>

358. Further, Professor Choi’s result assumes that “Customers combine A and B [the two products at issue] in fixed proportions on a one-to-one basis to form a final product.”<sup>705</sup> That is not the case here because hospitals combine their da Vinci robots with different types or amounts of EndoWrists or da Vinci servicing. Under the market condition that actually exists here, the economic literature shows that bundling such complementary products can harm consumer welfare even when it does not foreclosure a substantial market share.<sup>706</sup>

359. In short, the Choi article result that Dr. Smith incorrectly claims supports a conclusion that Intuitive’s bundle lowered its prices is actually limited to (1) a merger that enables (2) mixed bundling (3) without any foreclosure of rivals of (4) products used in a fixed ratio. This case instead involves (1) an existing firm that already makes the two products (2) that engages in pure bundling (3) that forecloses rivals (4) where the two products are used in varying ratios. Not only does this mean that Dr. Smith is wrong that the Choi article supports his claim, but in fact the Choi article finds that any one of the first three conditions that actually exists in this case suffices to make bundling economically harmful, and other economic literature shows that is also true given the fourth condition that actually exists in this case. The Choi article on which Dr. Smith relies thus actually provides powerful

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<sup>700</sup> Smith Report ¶224.

<sup>701</sup> Choi, *supra* note 693, at 565; *id.* at 568 (“The above calculations assume there is no foreclosure due to the merger and the merging firm does not behave strategically with anticompetitive intent.”)

<sup>702</sup> Choi, *supra* note 693, at 568 (“If foreclosure takes place with the merger, the impacts on social welfare and consumer surplus are unambiguously negative.”)

<sup>703</sup> Choi, *supra* note 693, at 568 (“Consumers are obviously worse off with the exit of outsiders.”).

<sup>704</sup> See Elhaug Report Sections II.E.1, II.G.1, & V.B; *supra* Section IV.

<sup>705</sup> Choi, *supra* note 693, at 558.

<sup>706</sup> See, e.g., EINER ELHAUGE, UNITED STATES ANTITRUST LAW AND ECONOMICS 464-466 (4<sup>th</sup> ed. 2022) (collecting academic literature).

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affirmative support for the proposition that Intuitive’s challenged restraints raised prices, not lowered them.

**iii. Dr. Smith’s Unsupported Conclusion That Any Discounts Offered by Intuitive Were Caused by the Challenged Conduct**

360. Dr. Smith argues that Intuitive’s bundling enabled it to offer price discounts.<sup>707</sup> However, he provides no evidence or reasoning to support his assertion that Intuitive’s bundling was necessary for it to offer price discounts. His only support for his assertion is that Intuitive sometimes offered discounts from its actual list prices on the da Vinci robot to particular buyers.<sup>708</sup> But that hardly shows that bundling was what enabled Intuitive to offer those discounts. Indeed, Dr. Smith himself stresses that these discounts were given on the da Vinci robot, but not on instruments or da Vinci servicing.<sup>709</sup> There is no reason why Intuitive could not have offered the same discounts on the da Vinci robots that were sold unbundled to prohibitions on rival EndoWrist repairs and da Vinci servicing. Moreover, even if the challenged restraints did enable Intuitive to offer discounts from actual list prices that were inflated by its challenged restraints, that would not constitute a procompetitive benefit because it would not provide any evidence that the restraints enabled and resulted in prices that were below but-for levels.<sup>710</sup>

**iv. Dr. Smith’s Unsupported Conclusion That the Challenged Conduct Was Necessary to Allow for Leasing Arrangements**

361. Dr. Smith asserts that the challenged conduct was necessary to offer leasing arrangements for the da Vinci robot that charged either a flat amount per month or charged based on usage.<sup>711</sup> But he provides no reasoning or evidence to support his claim that Intuitive could not have offered such leasing arrangements without the challenged restraints. In fact, Intuitive has entered into leasing contracts for the da Vinci robot that provide for separate purchase orders on EndoWrists, and thus could have sold them separately without restraining the use of rival instruments.<sup>712</sup>

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<sup>707</sup> See Smith Report ¶¶ 225a, 229-230.

<sup>708</sup> See Smith Report ¶ 225a.

<sup>709</sup> See Smith Report ¶ 225a.

<sup>710</sup> See *supra* II.A.4, III.B, & V.B.

<sup>711</sup> Smith ¶225b.

<sup>712</sup> The equivalent to the Sales, License, and Service Agreement (SLSA) that Intuitive used for da Vinci robot sales was the “Use, License, and Service Agreement” (ULSA) that Intuitive used for leases of da Vinci robots. Similar to the SLSA, *see supra* Section II.B.2.i, a standard term in

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Likewise, those leasing contracts could be offered without including terms that prohibit rival EndoWrist repairs, and rivals have provided such repairs in separate contracts with hospitals.<sup>713</sup> It is thus clearly possible to lease da Vinci robots separately from sales of EndoWrists, sales of da Vinci service, and without prohibitions on rival EndoWrist repairs and rival da Vinci servicing. Moreover, bundling da Vinci robots to sales of EndoWrists or da Vinci service at elevated prices already effectively charges customers on a per-use basis by making those who use their da Vinci robot more often pay more. Indeed, Dr. Smith appears to concede as much.<sup>714</sup> Thus, if anything, Intuitive would have had more incentives to offer leases with per-use rental prices without the challenged restraints.

**v. Dr. Smith’s Analysis Fails to Take Into Account That Many Customers Preferred Rival Offerings to Intuitive’s Financial Offer**

362. Dr. Smith’s argument also fails to take into account that with the challenged restraints, and whatever supposedly superior financial terms they enabled, many hospitals nonetheless chose to buy EndoWrist repairs or da Vinci servicing from rivals. This necessarily means that they preferred the rival product with whatever financial terms rivals offered over the supposedly superior financial terms that Intuitive was offering. Further, without the challenged restraints, Intuitive could still offer the products both bundled (with whatever superior financial terms required a bundle) and unbundled without those superior financial terms, and let buyers choose whether they preferred to buy the bundle from Intuitive or instead to buy the da Vinci robot from Intuitive while buying EndoWrist repairs and/or da Vinci servicing from its rivals at whatever financial terms they offered. Dr. Smith provides no rationale for denying buyers to choose whichever combination of products and financial terms they deemed best.

***C. The Restraints Did Not Resolve Any Safety/Quality or Reputational/Liability Problems That Buyers Had Insufficient Incentives to Consider***

363. Dr. Smith argues that the challenged restraints were justified because there are safety/quality concerns with rival Endo Wrist repairs or da Vinci servicing that

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ULSAs was that “Instruments and Accessories will be made available to Customer from Intuitive pursuant to separate orders placed by Customer to Intuitive from time to time in accordance with the terms and conditions contained in the then current Instrument and Accessory Catalog.” Lease Agreement with Stamford Hospital § 8, Intuitive-01989020 at -028.

<sup>713</sup> See, e.g., Restore-00004061-075 (Service agreement between Baylor Scott & White Health and Restore Robotics).

<sup>714</sup> See Smith Report ¶ 225a & n.564.

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raised reputational/liability problems for Intuitive that hospitals had insufficient incentives to consider.<sup>715</sup> This argument fails on two scores. (1) Dr. Smith fails to establish that the use of rival EndoWrist repairs or da Vinci servicing lowered safety and quality relative to the use of Intuitive's EndoWrists or da Vinci servicing. (2) Even if such safety/quality concerns existed, Dr. Smith fails to establish that they raised reputational/liability problems for Intuitive that hospitals had insufficient incentives to consider. I address each point in turn below.

*1. Dr. Smith Has Failed to Establish that Rival EndoWrist Repairs and da Vinci Servicing Were Less Safe or Lower Quality*

364. In my initial report, I collected numerous types of evidence indicating that repaired EndoWrists were not less safe or lower quality than new EndoWrists. (1) Repaired EndoWrists were deemed equivalent in quality to new EndoWrists by hospitals and independent repair companies and to be as good or better than new EndoWrists by industry analysts and Intuitive itself.<sup>716</sup> (2) No adverse events were associated with rival-repaired EndoWrists, but over 100 adverse events involving injury or death were associated with new EndoWrists.<sup>717</sup> (3) If the rationale for the restraint were safety or quality concerns, one would have expected Intuitive to have done testing to determine that rival-repaired EndoWrists had performance issues before imposing the restraints, but in fact it did not do so.<sup>718</sup> (4) There was no evidence that rival da Vinci servicing was lower quality and the FDA had found that in general rival servicing of medical devices was safe and high quality.<sup>719</sup>

**i. Intuitive Itself Deemed Repaired EndoWrists to Be Equivalent in Quality to New EndoWrists.**

365. In response to the point that Intuitive itself deemed repaired EndoWrists to be as safe as new ones, Dr. Smith argues that Intuitive's assessment was limited to EndoWrists that Intuitive had refurbished by replacing significant portions of the instruments, whereas its rival Rebotix did not replace any instrument components.<sup>720</sup> This argument has a number of problems.

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<sup>715</sup> See Smith Report ¶¶ 182-183, 186-226.

<sup>716</sup> Elhauge Report ¶¶ 157, 294-298, 380-384.

<sup>717</sup> Elhauge Report ¶¶ 299, 381.

<sup>718</sup> Elhauge Report ¶ 380.

<sup>719</sup> Elhauge Report ¶ 382.

<sup>720</sup> Smith Report ¶ 192a.



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366. *First*, Dr. Smith’s premise that rivals do not repair or replace any instrument components is mistaken. The document cited by Dr. Smith is itself describing how to replace an instrument component—namely, an existing chip with the Interceptor chip.<sup>721</sup> Further, the document cited by Dr. Smith only describes the process of resetting the use counter and omits other steps (including repair and replacement) that both Rebotix and Restore also performed.<sup>722</sup>

367. *Second*, Dr. Smith provides no basis for his assumption that, when an instrument is in such bad shape that a significant portion of it needs to be replaced, the resulting refurbished instrument is better than another instrument that did not require any components to be replaced, but rather required only resetting the use counter and performing less drastic repairs.<sup>723</sup> In assessing the latter, Dr. Smith ignores copious evidence I collected in my report showing that, when independent repair companies reset EndoWrist counters, they inspect, verify, and repair all the components to make sure the instrument is in good enough shape to be able to withstand the additional uses.<sup>724</sup> There is also ample other evidence confirming the

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<sup>721</sup> REBOTIX162404-424.

<sup>722</sup> See Parnell Rebuttal Report ¶¶ 94 (“After the Interceptor is installed, Rebotix then performs any needed repairs on the tool end of the EndoWrists, such as sharpening scissors, aligning graspers, or ensuring sufficient tightness on needle drivers. Rebotix then makes any needed adjustments to the cables.”); May (in *Restore*) Dep. at 100:12-102:3 (stating that

; REBOTIX131592 (describing Rebotix repair procedures).

<sup>723</sup> [REDACTED]

May (in *Restore*) Dep. at 100:12-102:3.

<sup>724</sup> From Elhauge Report n.113, see Kyle Marks 5/21/2021 Dep. (CommonSpirit Health), Restore Robotics LLC, et al. v. Intuitive Surgical, Inc., No. 5:19-cv-55 (N.D. Fla.), at 27:10-28:4 (“My understanding of the process is, is that they take the EndoWrist and they reprogram the microchip that’s on it to give us the set number of lives . . . . In the process, *they verify the function of the device*. Like I say, if the -- if the forceps were, you know, misaligned, they *realign* them. If the scissors were, you know, dull, then they were *sharpened* again, just like we would do for any other, you know, surgical instrument that we use in the hospital, and then we’d get those back.”). From Elhauge Report n.117, see Kevin May 11/3/2022 Dep. (Restore), *In re da Vinci Surgical Robot Antitrust Litigation*, No. 3:21-cv-3825 (N.D. Cal.), at 100:12-102:3 [REDACTED]



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vigor of that process by independent repair companies.<sup>725</sup> Even defense expert Howe acknowledges that independent repair companies inspected the instruments they were resetting in order to make sure they were functional.<sup>726</sup>

<sup>725</sup> Vautrot 5/22/2021 Dep., *Restore Robotics LLC, et al. v. Intuitive Surgical, Inc.*, Ex. 4 at Restore-00039124 [REDACTED]

[REDACTED]; Stan Hamilton 11/4/2022 Dep. (affiliated with Rebotix), *In re da Vinci Surgical Robot Antitrust Litigation*, at 71:4-72:11 (“Q. Were there endoWrists -- Si endoWrists that were not broken that Rebotix reset the uses counter for? MR. ERWIG: Object to form. THE WITNESS: “Broken” is obviously not a very specific, technical term, but yes, I would say that we did -- that we did do -- but in any case, it doesn't matter whether they were broken or not. The process was meant not only to assure that anything that was broken was fixed, but **the process was meant to assure that everything about the instrument was restored to the condition that we could assure** that unless it was mishandled or mistreated, obvious things that would happen, same to a repaired instrument as to a new instrument. If those kinds of events did not occur, then it was the equivalent of an instrument to go through 10 more lives. And so what that means is that there were maintenance processes, assurance processes that were part of our process. So even though something might -- they might not have given it to us and said on the form -- all the control forms that went back and forth with the instruments might have not said, “This instrument is broken.” In some cases it did say, “This instrument is broken.” In some cases it didn't say, “This instrument is broken.” It still got all the maintenance that the process was laid out for. So in other words, **checking the tension on the cables, sharpening whether they said it wasn't sharp or not, alignment whether they said it was misaligned or not. All those things occurred as part of the process.**”); Rick Ferreira 11/10/2022 Dep. (Iconocare, which did the 510(k) submission for Restore), *In re da Vinci Surgical Robot Antitrust Litigation*, at 121:2-6 (“THE DEPONENT: **The device -- you're going to have to pass an inspection when they come back in**, right? So if something gets bent or broken on the device coming in or the housing's cracked on it, it won't be able to be reset at all.”); Restore-00002859-862 at -861 (Email attachment titled “Restore Robotics Offerings -v2.docx”: **“The Repair/Reset process includes a thorough testing and evaluation** as well as services such as realigning blades or graspers, sharpening where needed, etc. Ultrasonic cleaning is provided and testing is performed both before and after the reset process.”); Clif Parker 5/4/2021 30(b)(6) Dep. (Restore), *Restore Robotics LLC, et al. v. Intuitive Surgical, Inc.*, at 172:2-15 [REDACTED]

<sup>726</sup> Howe 10/1/2021 Dep. (expert witness), *Rebotix Repair, LLC, v. Intuitive Surgical, Inc.*, at 243:5-12 (“Q. Well, does Rebotix, after it's tensioned the cables in an EndoWrist instrument, does it inspect that instrument to determine whether it's functional? A. They -- **they do some limited inspections to determine functionality, yes.**”).

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368. Since my initial report, Dr. Parnell has provided additional evidence that both details the extensive testing and repairs done by EndoWrist repair rivals to weed out EndoWrists that might be likely to fail and that indicates those rival-repaired EndoWrists were no more prone to failure than Intuitive’s EndoWrists.<sup>727</sup>

369. **Third**, even if we assume Dr. Smith were right that replacing a significant portion of instruments would have made Intuitive’s refurbished EndoWrists better than rival-repaired EndoWrists, that would not justify Intuitive’s challenged restraints. The reason is that those challenged restraints banned all rival repairs, regardless of how many components they replaced.

**ii. Other Market Participants Deemed Repaired EndoWrists to Be Equivalent in Quality to New EndoWrists.**

370. In response to the point that hospitals, surgeons, and third-party companies deemed repaired EndoWrists to be as safe as new ones, Dr. Smith offers two responses. **First**, Dr. Smith dismisses that evidence on the grounds that they were not able to evaluate the safety of EndoWrists because they lack proprietary information and have only used repaired EndoWrists a limited number of times.<sup>728</sup> But as noted in my Initial Report, “[s]urgeons and hospitals also have some ability to determine whether an instrument is safe for use.”<sup>729</sup> Dr. Smith acknowledges this, noting that surgeons will replace an instrument not performing up to standard and will avoid instruments they believe do not have adequate safety.<sup>730</sup>

371. **Second**, Dr. Smith argues that there is ample evidence of safety concerns about third-party repairs or servicing.<sup>731</sup> But his cited evidence here consists only of testimony by three surgeons that he characterized as having discomfort with using EndoWrists whose use counter was “circumvented.”<sup>732</sup> When further questioned, one of the surgeons admitted that he would be “okay” using a reset EndoWrist if the

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<sup>727</sup> See Parnell Rebuttal Report ¶¶ 23, 26, 29, 51-101, 111-141, 145, 151-154, 166-173.

<sup>728</sup> Smith Report ¶¶ 192b, 196.

<sup>729</sup> Elhauge Report ¶61 (citation omitted). See also, *id.* at ¶381 (“Plaintiff expert Dr. Eugene Rubach likewise opines that ‘Surgeons use surgical instruments in ways that safeguard against patient harm...’” (citation omitted)).

<sup>730</sup> Smith Report ¶¶195-196. Far from being evidence that third party providers need to be excluded, Smith’s evidence on the ability of surgeons to evaluate the performance of instruments and reliability (and identity) of third party instruments shows how the marketplace would be able to ensure sufficiently high patient safety.

<sup>731</sup> Smith Report ¶ 196.

<sup>732</sup> Smith Report ¶ 196.

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hospital had a justification and safety research supporting it.<sup>733</sup> Another of the surgeons explained that his concern was that he was “not willing to do something that’s not FDA approved.”<sup>734</sup> The third surgeon admitted he had no familiarity with repaired EndoWrists, such that his concern proves nothing about their actual safety.<sup>735</sup> These three surgeons do not express any special concerns about the safety or reliability of third-party repairs.<sup>736</sup> Nor is their testimony relevant to rival da Vinci servicing. Even if we viewed this testimony as expressing safety or reliability concerns about rival EndoWrist repairs, Dr. Smith does not explain why he credits it over copious contrary evidence that includes hospitals running trials where they actually used rival-repaired instruments and found them to be just as safe and high quality as new instruments.<sup>737</sup>

### **iii. Repaired EndoWrists Have Fewer Adverse Events than New EndoWrists.**

372. Dr. Smith never offers any response to my point that no adverse events were associated with rival-repaired EndoWrists, but over 100 adverse events involving injury or death were associated with new EndoWrists.<sup>738</sup> Instead, he tries to change

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<sup>733</sup> Maun (in *In re: da Vinci*) Dep. at 28:19-29: (“Q. If Franciscan were to tell you that its hospitals would be stocking EndoWrists that had reset use counters like I had just described, how would you react to that? A. I would -- I would probably ask for their justification and their safety research as to why they feel they can do that for the patients, and if I felt comfortable with their answer, then I would be okay with it.”).

<sup>734</sup> Estape (in *In re: da Vinci*) Dep. at 59:8-22 (“Q. Would you be willing to use an instrument from a company that has wiped the uses from an EndoWrist? A. You know, I would have to have a long discussion with the company to see if this is allowed, to see how they’re going to get around doing that. It just doesn’t seem -- I mean, if -- I would have to leave that at a much higher level where I’m at. It would surely improve the cost efficiency of doing the instruments by letting it go longer, but I’m not willing to do something that’s not FDA approved because, you know, anything that happens to the patient, they’re going to come down on me for having used equipment that was not FDA approved at that time.”); *id.* at 60:24-61:1 (“...so if we’re doing something off label [i.e., not FDA-approved], I surely want to know about it, and I probably wouldn’t participate in it.”).

<sup>735</sup> Francis (in *In re: da Vinci*) Dep. at 45:8-47:25.

<sup>736</sup> See, e.g., Francis (in *In re: da Vinci*) Dep. at 30:13-16 (“Q. Would you agree to use a device on a patient if the device had been serviced by a business that lacked a required FDA clearance? A. Yes.”).

<sup>737</sup> Elhauge Report ¶¶ 157, 294-298, 380-384. *See also supra* Section II.A.3 (noting that surgeons and other medical professionals who tried them out could not “discern any difference” between them).

<sup>738</sup> Elhauge Report ¶¶ 157, 294-298, 380-384. *See also*, Kevin May of Restore testified his companies have had “zero recalls and zero MAUDE events in the 33 years that I’ve had my business.” May (in *In re: da Vinci*) Dep. at 81:24-82:1; CNBC found the FDA’s MAUDE database

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the topic by stressing that he understands that Dr. Howe identified 27 cases of instrument failure following rival resets of EndoWrists.<sup>739</sup> But Dr. Smith never disputes my showing that mere instrument failures need not create any safety issue,<sup>740</sup> so such instrument failures are clearly less significant than the over-100 adverse events involving injury or death associated with new EndoWrists. Nor does he dispute my showing that one surgeon alone had had 50 instrument failures involving new EndoWrists.<sup>741</sup> The Dr. Howe evidence cited by Dr. Smith thus provides no evidence to support a conclusion that rival-repaired EndoWrists were less safe.

373. Dr. Smith points to Dr. Howe’s opinion that “he would expect Rebotix’s reset efforts—and the use of EndoWrist instruments beyond the limits prescribed by Intuitive—would increase instrument failure rates due to increased wear and tear.”<sup>742</sup> However, Dr. Parnell showed that Dr. Howe failed to consider: (a) the extensive testing and repairs that Rebotix did to assure that reset EndoWrists would not fail due to wear and tear; (b) the fact that “newly manufactured Intuitive devices that are not necessarily subjected to the same level of inspection, testing, and adjusting performed by Rebotix during its repair process”; and (c) all the evidence that new EndoWrists are equally or more likely to fail than rival-set EndoWrists.<sup>743</sup>

#### **iv. Intuitive Never Tested Rival-Repaired EndoWrist Quality.**

374. Dr. Smith offers no response to my point that Intuitive never did testing to determine that rival-repaired EndoWrists had performance issues before imposing the restraints.<sup>744</sup> Indeed, Dr. Parnell found: “Hospitals that used the Rebotix repair services and were informed by Intuitive that those repaired instruments might pose safety risks asked Intuitive to provide data indicating that the instruments repaired by Rebotix were unsafe. Intuitive has never been able to provide any sort of data or test results indicating that Rebotix-repaired instruments, or any Intuitive instruments

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“shows reports of at least 85 deaths and 245 injuries related to the da Vinci Surgical System” between 2000 and April 2013. CNBC, *Counting the Problems of Robot-Assisted Surgery*, <https://www.cnbc.com/id/100653176> (accessed 2/26/2023).

<sup>739</sup> Smith Report ¶208.

<sup>740</sup> Elhauge Report ¶ 381. *See also* Rubach Rebuttal Report ¶¶ 3.f, 9-10, 15.

<sup>741</sup> Elhauge Report ¶ 381.

<sup>742</sup> Smith Report n.504.

<sup>743</sup> *See* Parnell Rebuttal Report ¶¶ 23, 26, 29, 51-101, 111-141, 145, 151-154, 166-73, 180-211, 285-88.

<sup>744</sup> Elhauge Report ¶ 380. The fact that Intuitive never tested rival-repaired instruments is further documented in Parnell Rebuttal Report ¶¶ 143, 157-165.

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repaired by other third parties, pose safety concerns.”<sup>745</sup>

375. If, as Dr. Smith asserts, the rationale for the challenged restraints was a concern about the safety and quality of rival repairs or servicing, one would have rationally expected a firm like Intuitive to have done testing to determine whether such a concern existed before imposing those restraints. The fact that it imposed those restraints without any testing instead rationally indicates that Intuitive was acting based on its incentives to suppress rival competition, rather than based on incentives to increase product safety and quality.

**v. The Lack of Evidence That Rival da Vinci Servicing Was Lower Quality.**

376. In response to my point that there was no evidence that rival da Vinci servicing was lower quality,<sup>746</sup> Dr. Smith cites three pieces of evidence, none of which is telling.

377. **First**, Dr. Smith cites one Intuitive technician who complained that once a rival service provider had left device cables and cords unplugged and a switch turned off.<sup>747</sup> Not only is one incident hardly general proof, but it is unclear why leaving a machine unplugged is a safety/quality issue because it is relatively easy to plug the machine back in when it is needed.<sup>748</sup>

378. **Second**, Dr. Smith cites other occasions when “Restore was simply unable to perform service without Intuitive’s proprietary service laptops.”<sup>749</sup> But while the fact that Restore could not perform certain services without Intuitive’s proprietary service laptops may make those services uncontestable, it does not have any implication for the quality of the services that Restore did provide. Moreover, designing robots to require such proprietary information to provide service may constitute a technological tie for reasons discussed above in Section II.B.1.i.

379. **Third**, Finally, Dr. Smith cites an email from one person at Renovo.<sup>750</sup> The email says Restore is “doing very low-end service on the da Vinci S and Si”, which

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<sup>745</sup> Parnell Rebuttal Report ¶ 165.

<sup>746</sup> Elhauge Report ¶ 382.

<sup>747</sup> Smith Report ¶203.

<sup>748</sup> See picture of unplugged cable and cord along with matching receptible at BSWH-0000255-262 at 258-260. As noted by Intuitive’s technician, this was resolved when they “shut down the system and reconnected these cables.” *Id.* at 256.

<sup>749</sup> Smith Report ¶203.

<sup>750</sup> Smith Report ¶203, citing to RenovoIS-000001-024 at -009.



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Dr. Smith interprets to mean “Restore’s service is low quality.”<sup>751</sup> But other parts of the email suggest the description “low-end service” instead referred to the fact that the types of services being performed were simple, rather than that the quality of the service provided was.<sup>752</sup> And while the email does advise against relying on Restore’s services, Dr. Smith fails to mention that this was based on several factors, including that Restore could not perform incontestable service and that Intuitive had threatened to enforce its challenged restraints against buyers who used a rival provider of servicing.<sup>753</sup> In any event, the opinion of one person hardly suffices to support a conclusion that Restore was not able to provide quality service, especially given the evidence that many other hospitals did regard its service as providing quality service.<sup>754</sup> Moreover, Dr. Smith’s arguments on the quality of rival da Vinci servicing ignore the fact that, as Dr. Smith himself concedes, Restore performed that servicing using former Intuitive technicians who were trained by Intuitive itself.<sup>755</sup> Dr. Smith does not explain why technicians who were high quality when working for Intuitive suddenly become low quality when they move to work for another firm.

380. Since my Initial Report, Dr. Parnell has also examined Restore’s da Vinci servicing. He found that all although Restore could not provide certain services because they required access to Intuitive’s propriety software or to parts that Intuitive would not supply, it was able to offer other da Vinci services, its personnel were well-trained to do so, its methods for performing them were similar to Intuitive’s, and those services were desired by some hospitals.<sup>756</sup>

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<sup>751</sup> RenovoIS-000001-024 at -009; Smith Report ¶203.

<sup>752</sup> RenovoIS-000001-024 at -009 (“Here are our findings about Restore Robotics: ... 5. They do not interact with the software on the robot ... 6. They can only perform minor repairs on the robot (batteries, light bulbs...etc.). They cannot do any service on the robot arms, illuminators on video stack or software. They can only do about 90% of a da Vinci S or Si PM.”)

<sup>753</sup> RenovoIS-000001-024 at -009 (“Here are our findings about Restore Robotics: ... 5. They do not interact with the software on the robot ... 6. They can only perform minor repairs on the robot (batteries, light bulbs...etc.). They cannot do any service on the robot arms, illuminators on video stack or software. They can only do about 90% of a da Vinci S or Si PM. 7. If Intuitive Surgical finds out that a non-Intuitive part has been used, they no longer take any responsibility for that part of the robot (this is directly from Intuitive management).”).

<sup>754</sup> Elhauge Report ¶¶ 311.

<sup>755</sup> Smith Report ¶ 54.

<sup>756</sup> See Parnell Rebuttal Report ¶¶ 30, 289-294.

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**vi. The Lack of Safety Justification for Intuitive's Use Limits.**

381. Dr. Smith also claims that the use limits were necessary to “ensure” that performance will meet specifications.<sup>757</sup> But this is contradicted by the numerous situations in which use-limited EndoWrists failed in surgery.<sup>758</sup> As noted in my Initial Report, Dr. Rubach has opined that these use limit criteria are arbitrary, use counter limits have not been mandated by the FDA, and “surgeons have safely operated the instruments used with both traditional laparoscopic surgical systems and rival MIST surgery robots.”<sup>759</sup> Dr. Smith’s reference that Intuitive’s methods “have been proven safe and reliable in the field” says nothing about whether the use limits, as opposed to product design or surgeon training, is responsible for that safety. Further, as Dr. Parnell points out, a use counter provides “no check on the condition of the instrument or an assessment of the instrument’s operation”.<sup>760</sup>

382. More generally, I already provided extensive evidence that Intuitive’s use limits were not justified on safety grounds.<sup>761</sup> Indeed, the use limits were set by Intuitive’s marketing personnel, and Intuitive intentionally chose not to test its EndoWrists beyond the marketing-determined use limits.<sup>762</sup>

**vii. Conclusion Regarding Rival Quality Claims.**

383. Ultimately, Dr. Howe and Dr. Smith’s position that rival-repaired EndoWrists and rival da Vinci servicing were lower quality conflicts with the views not only of plaintiff experts Dr. Parnell and Dr. Rubach, but also the views of market participants. Nor does the position taken by Dr. Howe and Dr. Smith explain why Intuitive did no testing to determine that rival-repaired EndoWrists had performance issues before imposing the restraints. It is my understanding that the burden of proof on procompetitive justifications is on defendants, and Dr. Smith does not explain why he credits the views of Dr. Howe over those of the plaintiff experts. Furthermore, the defense expert argument on this procompetitive justification depends on the tribunal or factfinder resolving this issue in the defense’s favor. In contrast, my conclusion would remain the same regardless of how this factual issue is resolved, given the evidence that hospitals had sufficient incentives to take any safety/quality issues into account, as I discuss in the next section.

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<sup>757</sup> Smith Report ¶27. See also, *id.* at ¶197.

<sup>758</sup> Elhauge Report ¶381.

<sup>759</sup> Elhauge Report ¶384.

<sup>760</sup> Parnell Rebuttal Report ¶ 216. See also *id.* ¶¶ 262-263.

<sup>761</sup> See *supra* Section V.C.

<sup>762</sup> Parnell Rebuttal Report ¶¶ 26, 29, 147, 215, 250-261.

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*2. Any Safety/Quality Issues Did Not Raise Reputational/Liability Problems That Buyers Had Insufficient Incentives to Consider*

384. In my initial report, I pointed out that, if there were a genuine safety/quality issues with rival EndoWrist repairs or da Vinci servicing, less restrictive methods exist, such as educating hospitals on how to evaluate the condition of used or repaired EndoWrists or the quality of rival da Vinci servicing.<sup>763</sup> I addressed the concern that hospitals might not have adequate incentives to take safety/quality problems with rival repairs or servicing into account, and found that concern did not apply here, not only because (as summarized in the prior section), the evidence did not show that rival EndoWrist repairs and da Vinci servicing were lower quality, but also because the incentive claim needed for this claimed procompetitive justification was not established given that: (1) Plaintiff expert Ms. Kimberly Trautman found that there were clear methods to attribute EndoWrist failures to rivals if they caused them; (2) any reputational and liability risk would be less if rivals repaired EndoWrists and serviced da Vinci robots because that would increase the odds that any failures would be attributed to rivals rather than to Intuitive; (3) hospitals and surgeons have their own powerful reputational and liability incentives to avoid faulty EndoWrists and da Vinci robots; and (4) hospitals that owned da Vinci robots that cost them over \$1 million each have powerful incentives to avoid faulty EndoWrist repairs and da Vinci servicing that might damage those robots.<sup>764</sup>

385. In response, Dr. Smith mainly asserts that hospitals and third-party repair companies may or do have weaker incentives than Intuitive to protect patient safety and maintain product quality, without providing any supporting evidence for the assertion that they actually do in this case.<sup>765</sup>

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<sup>763</sup> Elhauge Report ¶ 383.

<sup>764</sup> Elhauge Report ¶ 385.

<sup>765</sup> Smith Report ¶¶ 187-190. Dr. Smith repeatedly calls this a “principal-agent” problem. Smith Report ¶¶ 187-190. But that problem concerns how, when a principal delegates authority to its agents, to minimize the agency costs that arise because the agents may have incentives to deviate from their principal’s interests. *See, e.g.,* Jensen & Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976). Indeed, the Pindyck and Rubinfeld textbook that Dr. Smith to cites to explain the principal-agent problem defines an agent as an “[i]ndividual employed by a principal to achieve the principal’s objective”, while a principal is an “[i]ndividual who employs one or more agents to achieve an objective.” PINDYCK & RUBINFELD, MICROECONOMICS 646 (8<sup>th</sup> ed. 2013). The principal-agent problem thus does not apply here because neither hospitals nor third-party repair companies are agents or employees of Intuitive. They are rather its buyers and rivals. Dr. Smith’s real argument appears to be the same one I considered in my initial report: whether hospitals and rivals externalize reputational and

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386. Although Dr. Smith acknowledges my point that hospitals and surgeons have their own powerful reputational and liability incentives to avoid faulty EndoWrists and da Vinci robots, he offers no real response to it.<sup>766</sup> His argument depends on a premise that hospitals and surgeons would willingly put their patients at increased health risk to save some money, which he himself calculates at \$90 per instrument use.<sup>767</sup> Yet Dr. Smith provides no evidence to indicate that they do so, and his position conflicts with defense expert Goodwin’s acknowledgement that hospitals “take patient safety seriously.”<sup>768</sup> Nor does Dr. Smith provide any explanation of how it could be likely that hospitals would put their patients at risk to save \$90 per instrument use in a world in which adverse health care events cause hospitals and surgeons enormous reputational costs and medical liability costs.<sup>769</sup> Instead, he simply asserts that “differences” between the economic incentives of Intuitive, hospitals, and surgeons implies that hospitals and surgeons are materially more willing to risk patient safety than Intuitive.<sup>770</sup> But the only two incentive “differences” that he points to show no such thing:

- a) One incentive difference he claims is that the da Vinci is Intuitive’s primary product, but is only one option for hospitals and surgeons, so that “the importance that the parties place on protecting the reputation of the da Vinci Surgical System likely varies.”<sup>771</sup> But my point was not that hospitals and surgeons value the reputation *of the da Vinci* as much as Intuitive does. The point was that hospitals and surgeons value *their own reputations* for delivering safe medical care and the avoidance of malpractice liability. Dr. Smith provides no evidence that the reputation and liability incentives of hospitals and surgeons to avoid safety and quality problems that could affect their reputations to perform any type of medical procedure and cost them

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liability costs onto Intuitive in a way that means hospitals and rivals lack adequate incentives to consider safety and quality issues. *See* Elhauge Report ¶ 385; Smith Report ¶ 189 (“healthcare providers do not internalize how the increase in patient risk from the resets would negatively impact Intuitive’s reputation”).

<sup>766</sup> Smith Report ¶190.

<sup>767</sup> Smith Report ¶¶ 188-189, 204.

<sup>768</sup> Goodwin Dep. 75:19-76:4.

<sup>769</sup> Harvard School of Public Health, *Medical liability costs in U.S. pegged at 2.4 percent of health care spending*, (2010), <https://www.hsph.harvard.edu/news/press-releases/medical-liability-costs-us/> (accessed 3/1/2013) (“the medical liability system’s annual price tag includes \$45.6 billion in defensive medicine costs, \$5.7 billion in malpractice claims payments, and more than \$4 billion in administrative and other expenses.”).

<sup>770</sup> Smith Report ¶190, 191a.

<sup>771</sup> Smith Report ¶191a.

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millions of dollars in malpractice liability are not just as strong, if not stronger, than Intuitive's. He thus offers no response to my actual argument.

- b) The other potential incentive difference he claims is that hospital administrators “may” have different incentives from surgeons on whether to use devices that have not been cleared by the FDA or to exceed OEM-specified use limits on those devices.<sup>772</sup> But the only evidence he points for this potential difference is testimony by a couple of surgeons that they would be unwilling to use such devices.<sup>773</sup> This evidence about the views of two surgeons does not show there is any difference between the incentives of surgeons and hospital administrators. Nor can any such difference have any relevance to da Vinci servicing, which neither requires FDA clearance nor violates any use limit on a medical device.<sup>774</sup> Moreover, to the extent any such difference existed and were relevant to rival EndoWrist repair, it would indicate that rival EndoWrist repair would not be used because the procedures cannot occur without a surgeon, so it could not be relevant to the procompetitive justification. Nor does Dr. Smith ever establish that any such difference is relevant to rival EndoWrist repair because he never rebuts evidence indicating that: (a) EndoWrist repairs and use-extension did not require a 510(k) clearance, including analysis by Intuitive, rivals, and industry analysts concluding that such clearance was not required; (b) both Intuitive and rivals in fact sold repaired or modified EndoWrists before obtaining any 510(k) clearance; and (c) EndoWrist repair rivals either received 510(k) clearance or could have in the but-for world.<sup>775</sup>

387. In response to my point that the reputational and liability risk would actually be lower if rivals repaired EndoWrists and serviced da Vinci robots, Dr. Smith offers three responses, all of which are economically flawed.

388. **First**, Dr. Smith falsely asserts that, “Professor Elhauge provides no evidence that faults would be ascribed to third-party companies and/or third-party companies would assume responsibility.”<sup>776</sup> In fact, I cited as evidence the opinion of Plaintiff expert Trautman that there are clear methods to determine if EndoWrist failures might be caused by third party repair.<sup>777</sup> Moreover, Dr. Smith's argument ignores

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<sup>772</sup> Smith Report ¶191a(ii).

<sup>773</sup> Smith Report ¶191a(ii).

<sup>774</sup> Experts for both plaintiff and defendant agree that da Vinci servicing requires no FDA clearance. Goodwin Report ¶ 11; Elhauge Report ¶¶ 59-60; Trautman Report ¶¶ 19, 29, 35.

<sup>775</sup> See *supra* Sections II.B.2.ii & V.B.4.

<sup>776</sup> Smith Report ¶ 191.

<sup>777</sup> Elhauge Report ¶ 385.



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the fact that Intuitive’s SLSAs provide that Intuitive is not liable for any problems resulting from third-party repairs or servicing, regardless of whether those third parties voluntarily assume responsibility, and indeed that customers must indemnify Intuitive for any harm that results from such third-party repairs or servicing.<sup>778</sup> In any event, it is my understanding that defendants bear the burden of proof on showing procompetitive justifications. If that understanding is correct, then it is defense expert Dr. Smith who must show that the evidence indicates that instrument failures would be misattributed in a way that creates the incentive problems that are necessary to establish his claimed procompetitive justification.

389. *Second*, Dr. Smith attacks a straw man by using selective quotation to falsely characterize my point. Dr. Smith claims, “Regarding third-party companies, Professor Elhauge asserts that ‘any reputational harm and liability risk for any resulting faults in equipment’ would be borne by those companies rather than Intuitive.”<sup>779</sup> But Dr. Smith is wrong that I ever claimed that 100% of the reputational harm and liability risk would always be attributed to the third-party companies. Instead, I stated, “if rivals repaired EndoWrists and serviced da Vinci robots, that would *increase the odds that* any reputational harm and liability risk for any resulting faults in equipment would fall on those rivals, rather than on Intuitive.”<sup>780</sup> Dr. Smith edited out the italicized words in order to falsely characterize my point.

390. To illustrate why Dr. Smith’s mischaracterization matters, suppose the following hypothetical facts. Suppose that if an Intuitive EndoWrist fails without having ever been worked on by any third-party company, 100% of the reputational harm and liability risk would be attributed to Intuitive, which makes economic sense because there would be no third-party company to blame. Suppose that if a third-party’s work on an EndoWrist caused it to fail, 80% of the reputational and liability risk would be attributed to the third-party, whereas 20% of it would be misattributed to Intuitive. Suppose further (contrary to fact but necessary for Dr. Smith’s procompetitive justification) that third-parties are more likely to cause an EndoWrist to fail, and to pick a number highly generous to Intuitive, suppose they are twice as likely to fail when worked on by a third-party. If the failure rate is X% for an Intuitive EndoWrist on which rivals did not work, it would then be 2X% for one on which rivals did work. Then the risk of reputational harm and liability risk to Intuitive from failure on an EndoWrist on which no rival worked would be 100% of

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<sup>778</sup> This is provided in SLISA §11.2. See, e.g., Intuitive-01846020, at -025.

<sup>779</sup> Smith Report ¶ 191.

<sup>780</sup> Elhauge Report ¶ 385 (emphasis added).



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$X\% = X\%$ . Then the risk of reputational harm and liability risk to Intuitive from failure on an EndoWrist on a rival did work would be 20% of  $2X\% = .4X\%$ . According, Intuitive's risk of reputational harm and liability risk would be much lower from rival-repaired EndoWrists. Thus, it does not at all have to be the case that the cause of failures would always be attributed with 100% accuracy for it to be true that rival repairs do not increase Intuitive's risk of reputational harm and liability risk. Because Dr. Smith falsely characterizes my point, he provides no response to the point I actually made.

391. **Third**, Dr. Smith points to various factoids, none of which provide economic evidence for his claim. He argues that my claim that fault for EndoWrist failures caused by third-party repairers would generally be correctly attributed to those third-party repairers is refuted because “evidence indicates that, when faced with a potential failure of a reset EndoWrist, Rebotix—which supplied SIS and Restore—attributed the incident to ‘sabotage’ by Intuitive.”<sup>781</sup> But the three documents he cites as evidence provide no such refutation:

- a) REBOTIX046346 includes an email evaluating the potential likelihood of intentional damage and taking responsibility by repairing the damage at no charge. If anything, this email raises the possibility that an IRC was considering assuming responsibility for failures that were not its fault, which is the opposite of what Dr. Smith claims.
- b) Restore-00003932 and Papit (in *Rebotix*) Dep. Ex. 10, are messages between personnel at Restore, Rebotix, and another Clif Parker-run company.<sup>782</sup> Internal correspondence suspicious of damaged EndoWrists is not the same as the IRC telling a customer there was sabotage and could not lead the customer to attribute any defect to Intuitive rather than to the IRC. Nor does the fact that, when faced with reports of failure, rival repairers were sufficiently confident in their work that they thought sabotage had probably occurred show that, when an actual EndoWrist failure occurred for which the rival repairer was at fault, the fault would not be attributed to it.
- c) Even if Dr. Smith were correctly characterizing this incident, it provides no support for a claim that blame for faulty IRC repairs would not usually be correctly attributed to the IRCs. To begin with, it is just once incident, and thus can show no such thing. Further, Dr. Smith is simply assuming without basis that Intuitive did not commit any sabotage and that, despite this reality,

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<sup>781</sup> Smith Report ¶ 191, citing to *id.* n.208, citing to Restore-00003932, REBOTIX046346, and Papit (in *Rebotix*) Dep. Ex. 10.

<sup>782</sup> <http://www.reach3dmedical.com/about.html> (accessed 3/1/2023).

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the hospital was convinced that it did in a way that damaged Intuitive's reputation.

392. **Fourth**, Dr. Smith also argues that his claim is supported by evidence that: “In a draft distributor agreement between Rebotix and SIS, Rebotix included an explicit clause stating that it is ‘not liable for any direct, consequential, indirect, incidental or special damages, losses or expenses whatsoever arising: (a) in connection with, or due to the use of, or lack of ability to use, any Component or Repaired Wrist; or any delay in delivery of Repaired Wrist from [SIS].’”<sup>783</sup> This draft agreement was never executed.<sup>784</sup> In any event, the fact that Rebotix did not want to bear consequential damages for the use of its technology by SIS when SIS did EndoWrist repairs does not prove that repairers disclaimed consequential damages in their contracts with hospitals. Nor, even if they did, would that show that liability would be shifted to Intuitive for those damages, or that any reputational harm would be shifted. Indeed, the inability of a hospital to recover for consequential damages from a faulty repairer would, if anything, only increase the incentives of hospitals not to deal with any repairers who posed greater safety and quality risks than Intuitive's EndoWrists. Finally, excluding consequential damages (which typically means damages that are not reasonably foreseeable) is fairly standard in contracts. Indeed, Intuitive's own SLSA contracts with hospitals not only disavow liability for consequential damages, but also disavow them even when it involves damage risks that were explicitly disclosed.<sup>785</sup> Thus, if Dr. Smith were right that disclaiming consequential damages indicates a party is trying to evade responsibility for safety/quality problems it created, the contracts indicate that this problem applied more strongly to Intuitive than to rival repairers.

393. **Fifth**, Dr. Smith also makes the general assertion that third-party repair companies “do not have the same incentives as Intuitive to protect patient safety and

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<sup>783</sup> Smith Report ¶ 191 & n.447.

<sup>784</sup> Posdal (in *Restore*) Dep. at 53.

<sup>785</sup> See Intuitive's standard SLSA contracts, §12 provided: “neither party will be liable for any indirect, punitive, special, incidental, or consequential damages in connection with or arising out of this Agreement (including loss of business, revenue, profits, use, data, or other economic advantage), even if that party has been advised of the possibility of damages.” *E.g.*, Franciscan Alliance Contract, Intuitive-01846020, at -025; South Broward Hospital Contract, Intuitive-00005135 at -140; St. Mary Duluth Contract, Intuitive-00204014, at -019. The same provision appears in §12 of Intuitive's standard ULSA leases. Lease Agreement with Stamford Hospital, Intuitive-01989020 at -031.

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the reputation of the da Vinci Surgical System.”<sup>786</sup> A general problem with his assertion is that he ignores the evidence, discussed above, that hospitals have strong incentives to avoid third-party repair companies that offer unsafe or low quality repairs, which gives third-party repair companies powerful incentives to avoid making unsafe or low quality repairs in order to make sales. Nor is his claim about the incentives of third-party repair companies supported by the evidence he cites for it. First, he argues, “Third-parties do not have Intuitive’s proprietary specifications and thus lack the means to ensure compliance with those specifications.”<sup>787</sup> But this is not an argument that third parties have poor incentives. It is rather an argument that Intuitive has inefficiently hobbled rival repairs by denying them needed information. Second, he claims that “third-party companies’ representations of their safety testing protocols of the EndoWrist reset process are misleading.”<sup>788</sup> However, his argument that those representations were misleading depends on his own mistaken premises that reset EndoWrists were not of equivalent quality and that rival repairers did not do thorough inspection and testing.<sup>789</sup>

394. *Sixth*, a general problem with all of Dr. Smith’s arguments is that while he asserts that Intuitive has special incentives to protect patient health to avoid reputational and liability costs, he fails to consider the fact that Intuitive also had special incentives to profit from the exclusion of rivals regardless of whether they were as safe and high equality or even better.<sup>790</sup> In short, Intuitive had incentives to foreclose rivals whether or not they were as safe and high quality. In contrast, hospitals had incentives to buy from rivals if they were offering safe, high-quality products, but not otherwise. Thus, the incentive-based argument counsels against allowing Intuitive to restrain hospital choice, not for it.

395. When claiming that only Intuitive can provided the highest level of patient safety, the Smith Report ignores any negative evidence regarding Intuitive’s actual provision of patient safety. As described in my Initial Report, Deutsche Bank found that “Intuitive’s OEM instruments and accessories had over a hundred reports of

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<sup>786</sup> Smith Report ¶ 206; *see also id.* ¶ 200 (a third party company does “not have the same incentives as Intuitive to protect patient safety and therefore is more likely to put patient safety at risk.”).

<sup>787</sup> Smith Report ¶ 201; *see also id.* ¶ 200a.

<sup>788</sup> Smith Report ¶ 202; *see also id.* ¶ 200a.

<sup>789</sup> *See supra* Section VI.C.1.

<sup>790</sup> “Several claims by plaintiffs [in other cases] and reports by analysts have found that Intuitive may use high-pressure sales tactics and aggressive marketing techniques. Internal company emails suggest sales – rather than need – motivated Intuitive representatives.” Drugwatch, *da Vinci Robotic Surgery Lawsuits*, <https://www.drugwatch.com/davinci-surgery/lawsuits/> (accessed 2/26/2023).

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adverse events involving injury or death in the U.S.<sup>791</sup> Consistent with these results, CNBC reported that the FDA’s MAUDE database “shows reports of at least 85 deaths and 245 injuries related to the da Vinci Surgical System” between 2000 and April 2013.<sup>792</sup>

396. **Finally**, Dr. Smith argues that, in addition to incentive issues, informing hospitals on how to evaluate the condition of used or repaired EndoWrists or the quality of rival da Vinci servicing might not be a less restrictive alternative for two other reasons.

397. To begin with, he argues that might be difficult to inform hospitals because Intuitive’s specifications are proprietary, and they might not be able to understand the risk of using rival repairs or servicing without those specifications.<sup>793</sup> But the fact that Intuitive would prefer to restrain rivals rather than inform hospitals about proprietary information does not alter the reality that the latter is a less restrictive alternative. Moreover, Dr. Smith’s argument amounts to a claim that Intuitive is withholding information that would improve patient safety because it wants to earn greater profits.<sup>794</sup> This undermines his claim that Intuitive’s incentives are perfectly aligned with protection patient safety and product quality. Instead, it confirms that Intuitive has incentives to deviate from safety and quality when that increases its profits by suppressing rival competition.

398. In addition, Dr. Smith claims that educating surgeons on how to sufficiently evaluate the condition of EndoWrists (new, used, repaired, etc.) would “impose financial and time costs on both Intuitive and hospitals.”<sup>795</sup> This assertion by Smith fails for at least two reasons: (a) Under Smith’s logic that Intuitive is more incentivized than hospitals and surgeons to protect patient health, one would expect Intuitive to have already provided this information,<sup>796</sup> and (b) Intuitive could simply

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<sup>791</sup> Elhauge Report ¶299, citing to Intuitive-00695006.

<sup>792</sup> CNBC, *Counting the Problems of Robot-Assisted Surgery*, <https://www.cnbc.com/id/100653176> (accessed 2/26/2023).

<sup>793</sup> Smith Report ¶209.

<sup>794</sup> Smith Report ¶209 (“educating numerous third parties [hospitals and surgeons] on the proprietary specs of the da Vinci Surgical System could pose serious risk to Intuitive of IP leakage...”).

<sup>795</sup> Smith Report, ¶209.

<sup>796</sup> The sources of instrument failure are not unique to repaired EndoWrists, as evidenced by the fact that Intuitive’s instruments often fail prior to reaching their use limit, so providing such information would improve patient safety and guard Intuitive’s reputation for the use of new EndoWrists.

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replace its efforts to warn and threaten customers over the use of repaired EndoWrists with alternative efforts to educate those customers on how to safely evaluate the condition of EndoWrists, whether new, used (up to actual-world or but-for use limits), or repaired.

*3. Dr. Smith Fails to Consider the Full Economic Ramifications of His Patient Safety Argument*

399. Dr. Smith’s basis for claiming that Intuitive is better incentivized than hospital and surgeons to ensure patient safety is based on the idea that Intuitive is concerned with maximizing the safety reputation of da Vinci surgery while hospitals and surgeons are concerned about patient safety but not specifically da Vinci’s reputation.<sup>797</sup> Under this logic, in the but-for world hospitals and surgeons would maximize total patient safety instead of the current outcome which maximizes da Vinci’s safety reputation. This, in turn, implies that Dr. Smith’s alleged procompetitive benefit of the challenged conduct is to shift the healthcare system’s focus from increasing overall patient safety to increasing da Vinci safety. Dr. Smith provides no evidence that such a shift from overall safety to just da Vinci safety would be a net social benefit.

400. Dr. Smith also fails to address the potential effect of higher prices on patient safety. Raising the cost of EndoWrists and da Vinci servicing necessarily raises the cost of performing robot-assisted surgery. This implies that some patients will be priced out of getting da Vinci surgery. To the extent that da Vinci surgery is safer than surgery with older technology, this would reduce overall patient safety.

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<sup>797</sup> See, e.g., Smith (in *In re: da Vinci*) Dep. at 90:17-91:2 (“Q. You would agree that hospitals, in general, have a pretty good reputation for being concerned with patient safety; right? [] THE WITNESS: That – that statement was pretty broad. I – I would say as a – an economist, you know, clinical outcomes is what – what a hospital delivers as a product. And good clinical outcomes and safety are – are related. And so, I would expect that they would – it would be in their incentive to have safety as a priority.”). *Id.* at 149:2-11 (“Q. Are you saying that ‘hospitals such as the Plaintiffs,’ in quotes, are willing to put their own patient safety at risk for these perceived short-term savings? A. I’m not making a statement about whether hospitals are – are deliberately doing something unsafe. I’m saying they don’t have – they do not have the same incentives as Intuitive does to protect Intuitive’s reputation and for safety and quality.”).



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**VII. PLAINTIFFS SUFFERED QUANTIFIABLE DAMAGES FROM OVERCHARGES  
PAID ON INTUITIVE’S ENDOWRISTS AND DA VINCI SERVICING**

401. In this section I address the criticisms of my damages analysis contained in the Smith Report. First, I address flaws in Dr. Smith’s specification of the timing and scope of entry in the but-for world. Second, I rebut Dr. Smith’s assertions and show there is no evidence that consumers would pay more in the but-for world. Third, I address additional issues raised by Dr. Smith regarding quantification of damages on EndoWrists. Fourth, I address additional issues raised by Dr. Smith regarding quantification of damages on da Vinci service.

***A. Dr. Smith Is Wrong to Assume that in the But-For World, IRCs Could Not Have Entered Earlier or Offered a Broader Range of Repairs and Service***

402. The Smith Report includes so-called “corrections” to my damages analysis based on his assumptions that, in the but-for world: (a) IRCs would not have entered the markets any earlier than they did in the actual world (July 11, 2018 for EndoWrist repairs and January 14, 2019 for da Vinci servicing); and (b) IRCs would not have offered any repaired instruments or da Vinci services other than the ones that they offered in the actual world.<sup>798</sup> His assumptions necessarily assume that, in the but-for world without the challenged restraints, IRCs would not have made investments sooner or made investments to provide a wider range of EndoWrist repairs and da Vinci robot servicing.

403. In making such assumptions, Dr. Smith ignores the obvious economic incentives IRCs would have had to make investments sooner, and over a wider range of EndoWrists or da Vinci robot servicing, in a world where the absence of the challenged restraints would mean IRCs could gain many more sales from such investments. Further, his assumption that the absence of the challenged restraints would not have altered IRC investment decisions at all conflicts with his assumption elsewhere in his report that the absence of the challenged restraints would have caused Intuitive to make drastically different investment choices.<sup>799</sup> In short, he is once again being internally inconsistent by assuming that the challenged restraints have no effect on rival investment decisions (to help his damages position), but have drastic effects on Intuitive’s investment decisions (to help his position on procompetitive justifications).

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<sup>798</sup> Smith Report ¶¶ 247-249, 253, 259 & Tables 3-5.

<sup>799</sup> See *supra* Section VI.A.



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404. In addition to those flaws with Dr. Smith's assumptions, the sections below detail extensive evidence supporting the idea that IRC entry (1) could have occurred earlier, (2) could have occurred for X/Xi-compatible EndoWrists, and (3) could have occurred for X/Xi da Vinci robot servicing.

*1. Evidence That Rival Entry Could Have Occurred by May 21, 2017*

405. Dr. Smith argues that rivals could not have offered EndoWrist repair by May 21, 2017 for two reasons: (i) IRCs were not poised to enter the EndoWrist repair market by May 21, 2017 in the actual world; and ii) the decision overruling the *Lexmark* case did not occur until May 30, 2017.<sup>800</sup> He states that, because of these arguments, his damages calculations all assume that but-for entry into the EndoWrist repair market would have occurred when actual entry occurred, which is July 11, 2018.<sup>801</sup> He then, with no support, also leaps to an assumption that but-for entry into the da Vinci servicing market would have occurred when actual entry occurred, which is January 14, 2019.<sup>802</sup> His leap is unjustified because, as noted below, neither of the arguments he makes for the supposed inability of IRCs to enter the EndoWrist repair by May 21, 2017, apply to their ability to enter the da Vinci servicing market.

406. Before addressing these issues below, I note that all my Initial Report stated was that there was evidence that but-for entry would have occurred by May 21, 2017, leaving it to the factfinder to resolve the dispute about when but-for entry would have occurred.<sup>803</sup> I have not offered any opinion that May 21, 2017 definitely **would** have been the but-for entry date. Rather, I have separately calculated damages based not only on this but-for entry date, but also based on but-for entry dates corresponding to actual dates of IRC entry into the EndoWrist repair and da Vinci servicing markets.<sup>804</sup> My analysis thus applies regardless of what the factfinder decides about this disputed factual issue.

407. In contrast, Dr. Smith's position takes this issue from the factfinder by insisting that the dispute must be resolved in favor of his position that but-for entry would not have occurred before actual entry occurred. Because of his insistence, Dr. Smith's report provides no estimate of what damages would be if the jury disagrees with his resolution of this dispute.<sup>805</sup> However, his backup reveals that if

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<sup>800</sup> Smith Report ¶ 247.

<sup>801</sup> Smith Report n.637 & Tables 3, 5.

<sup>802</sup> Smith Report nn. 630, 637 & Table 4.

<sup>803</sup> Elhauge Report ¶¶ 398, 403, 415. *See also id.* ¶¶ 304-309, 330-331.

<sup>804</sup> Elhauge Report ¶¶ 398, 403, 415 & Table 5-9.

<sup>805</sup> Smith Report n.637 & Tables 3-5.

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but-for entry would have occurred on May 21, 2017, even his damages method would have found estimated marketwide damages of \$629 million on EndoWrists and \$100 million on da Vinci service, for a total of \$729 million.<sup>806</sup>

#### **i. Whether Firms Could Have Entered the U.S. Markets by May 21, 2017**

408. Dr. Smith claims that rivals could not have entered the EndoWrist repair market by May 21, 2017 in the but-for world, because they were not prepared to do so in the actual world.<sup>807</sup> This argument fails for several reasons. To begin with, all the arguments and evidence that he offers for this position apply only to entry into the EndoWrist repair market.<sup>808</sup> His only “explanation” for extending his conclusion to entry into the da Vinci servicing market is an assertion that: “The same concepts apply to Professor Elhauge’s assumption to calculate damages for da Vinci service beginning on May 21, 2017.”<sup>809</sup> But whether rivals could have entered a market is a factual issue, not a conceptual issue, and thus requires factual evidence. Dr. Smith provides no such evidence that rivals could not have offered da Vinci service by May 21, 2017.

409. As for Dr. Smith’s claim that a but-for entry date of May 21, 2017 into the EndoWrist repair market is disproven by evidence that rivals were not actually prepared to enter by that date, it makes no economic sense and is contradicted by evidence that rivals were not only prepared to enter by that date, but had entered foreign markets by 2016:

- a) Dr. Smith’s logic makes no economic sense because it ignores the reality that incentives for earlier entry would have been greater in the but-for world than in the actual world. In a but-for world without the challenged restraints, an entrant could have gained far more sales, and thus would have had incentives to invest earlier to achieve earlier but-for entry. This economic inference is confirmed by IRC testimony that the challenged restraints delayed their entry.<sup>810</sup>

<sup>806</sup> See Smith Backup, Adjusted Damages.xlsx at Sheet Table 5A.

<sup>807</sup> Smith Report ¶247 (“Professor Elhauge does not present evidence that Rebotix had the infrastructure in place to begin selling reset EndoWrist instruments” in May 2017; “There is no evidence that Rebotix Panama—which preceded Rebotix Repair LLC—had plans to sell reset EndoWrists in the U.S.”).

<sup>808</sup> Smith Report ¶247.

<sup>809</sup> Smith Report n.630.

<sup>810</sup> See, e.g., May (in *In re: da Vinci*) Dep. at 75:16-76:1 [REDACTED]

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- b) Although in the actual world, IRCs did not enter the U.S. EndoWrist repair market with a fully realized product until July 2018, Dr. Smith himself admits that Rebotix began investing in R&D to provide EndoWrist repair as early as 2012, and developed its reset technology from 2013-2014.<sup>811</sup> By 2015-2016, Rebotix had successfully developed a method to reset the EndoWrist,<sup>812</sup> and by 2016, Rebotix had a patent on it and was selling EndoWrist repairs in Europe.<sup>813</sup> Further, the evidence indicates that as of 2012-2013, Intuitive was hearing reports of third parties repairing EndoWrists,<sup>814</sup> and that in 2011 Intuitive's internal analysis indicated that thwarting the threat of third-party repairs was the main goal for Intuitive's Xi EndoWrist chip redesign.<sup>815</sup>
- c) By 2016, Intuitive was actively monitoring and working to prevent IRC EndoWrist repair in Europe,<sup>816</sup> and also actively monitoring and threatening

Elhauge Report ¶ 163 &

n.397.

<sup>811</sup> Elhauge Report ¶ 179 & n.436; Smith Report ¶¶ 43, 45.

<sup>812</sup> Elhauge Report ¶ 305.

<sup>813</sup> Elhauge Report ¶ 305; Smith Report ¶ 45.

<sup>814</sup> See Intuitive-02068700 (2012 Intuitive email chain reporting on company possibly performing EndoWrist refurbishment for Henry Ford West Bloomfield); Intuitive-02069303 (2013 Intuitive email chain reflecting that a Venezuelan hospital was bypassing “the ten lives limit on instruments.”).

<sup>815</sup> See DuQue (in *In re: da Vinci*) 30(b)(6) Dep. Ex. 267 (2011 internal Intuitive email chain in which Tabish Mustafa identifies “reprocessing” as the more likely of two “threats” that Intuitive would like to make difficult “with the security features on our tag.”); Intuitive-02068686 (2011 internal Intuitive email chain about the RFID tag in which Thomas Cooper writes, “Rod plans to ask Sal for a decision about whether encryption is needed. Ted said the most important thing is to prevent people from reprocessing our instruments, which is more likely than people making knockoffs,” and “We need to at least make sure that someone can't just copy the contents of a tag from a new instrument and reprogram it at the end of life with that same information.”).

<sup>816</sup> See Intuitive-00614687-688 at 688 (email chain including a message from Dave Rosa (of Intuitive) informing Randy Fagin (of HCA Healthcare) regarding Intuitive's “response to the proposed reprogramming of EndoWrist instruments,” a message from Randy Fagin (of HCA) to Dave Rosa (of Intuitive) asking Intuitive “to provide guidance to our US and UK HCA facilities,” and a message from Daniel Bourcier (of Surgical International) whose team was “coming from the States” to offer a re-manufacture service to save the hospitals “approximately one million pound per year, per robot”); Intuitive-02068246-297 at 294 (a 9/2016 document describing the Rebotix interceptor including “[t]he Rebotix stance for compliance with EU medical device regulations”); Intuitive-00103331-333 at 332 (6/2017 Email from Katie Scoville of Intuitive indicating “Two sites have continued to use [R]ebootix. One site (France) recently committed to stop. Still working with UK site to clarify legal, compliance, and clinical risks.”). See also, Intuitive-00367520-521

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customers over their use of EndoWrists repaired by third parties in the United States.<sup>817</sup> Rebotix thus had the technological ability to enter the U.S. market prior to May 2017, and without the challenged restraints, Rebotix would have had strong economic incentives to do so, given that Rebotix distributor SIS estimated that its own potential revenue from selling EndoWrist repairs in the U.S. would be at least \$250-350 million a year.<sup>818</sup> This provides strong evidence that, without the challenged restraints, Rebotix could and would have also offered EndoWrist repairs in the United States by May 21, 2017. Dr. Smith’s damages analysis simply ignores this evidence and its implications.

- d) Dr. Smith also ignores evidence that Stryker, “a large competitor in aftermarkets for medical devices and instruments,” with a market capitalization of \$99 billion,<sup>819</sup> signed a proposal to buy Rebotix’s S/Si EndoWrist assets in December 2015 and planned to enter by 2017, but abandoned those plans in March 2016, after its due diligence turned up Intuitive’s exclusionary restraints.<sup>820</sup>
- e) Dr. Smith stresses evidence that Restore first became interested in providing reset EndoWrists after an April 2018 meeting with Rebotix.<sup>821</sup> But had Rebotix or Stryker entered the market earlier, Restore would likely have heard about the business opportunity earlier.<sup>822</sup> Likewise, SIS first learned about the business opportunity from Rebotix, but testified that it would have been interested in entering in 2016 if it had heard about the opportunity then.<sup>823</sup>

## **ii. Whether the Lexmark Decision Would Have Deterred Entry**

410. Dr. Smith’s other argument is that rivals would have been deterred from entering the EndoWrist repair market before the Supreme Court reversed the Federal Circuit’s *Lexmark* decision in May 30, 2017.<sup>824</sup> Although there was some evidence

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(5/30/2017 Intuitive email about “questions you used in EU regarding refurb instruments” with attachment \_\_\_\_\_ named \_\_\_\_\_ “12-8-16\_EU\_Refurbishment\_Survey\_DRAFT\_TT\_SP\_KMA\_LC\_edits\_TT\_edits.docx”); Intuitive-00423684-736 at 684 (dated 3/31/2017 and titled “I&A Refurbishment Feasibility Update”).

<sup>817</sup> Elhauge Report ¶ 304.

<sup>818</sup> Elhauge Report ¶ 305.

<sup>819</sup> Elhauge Report ¶ 279; *Market capitalization of Stryker Corporation (SYK)*, <https://companiesmarketcap.com/stryker-corporation/marketcap/> (accessed 2/27/2023).

<sup>820</sup> Elhauge Report ¶ 306.

<sup>821</sup> Smith Report ¶ 247.

<sup>822</sup> Elhauge Report ¶ 308.

<sup>823</sup> Elhauge Report ¶ 308.

<sup>824</sup> Smith Report ¶ 247.



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that Stryker and Rebotix may have deferred entry into the EndoWrist repair market in part because of their concerns about the then-current *Lexmark* decision by the Federal Circuit.<sup>825</sup> I am aware of no evidence that potential entrants were concerned that this *Lexmark* decision might impede rival provision of da Vinci servicing. Nor does Dr. Smith purport to provide any such evidence. He simply asserts that: “The same concepts apply to Professor Elhauge’s assumption to calculate damages for da Vinci service beginning on May 21, 2017.”<sup>826</sup> Dr. Smith appears to be offering a legal opinion that the Federal Circuit’s *Lexmark* decision would apply equally to repairing EndoWrists and to da Vinci servicing. I offer no opinion on such legal issues. Rather, I will simply note that market participants might not have shared Dr. Smith’s view, because factually speaking, the later-overruled Federal Circuit’s *Lexmark* decision concerned a patent holder’s imposition of restrictions on the refilling and reselling of printer cartridges, rather than restrictions on rival servicing of printers.<sup>827</sup>

411. As for whether the Federal Circuit’s *Lexmark* decision might have deterred entry into the EndoWrist repair market before May 30, 2017, my initial report noted there was some evidence that it might have, but that is hardly proof that it definitely would have.<sup>828</sup> The Federal Circuit’s *Lexmark* decision did not occur until February 12, 2016, and it reversed a March 27, 2014 district court decision that had concluded such patent restrictions could not be imposed on devices sold in the United States.<sup>829</sup> The U.S. Supreme Court granted certiorari review on December 2, 2016,<sup>830</sup> and a market participant checking the Supreme Court’s reversal rate in 2016 would have found that it reversed in 79% of all cases and in 85.7% of Federal Circuit cases.<sup>831</sup> Thus, a rational market participant might (a) not have been deterred at all from March 27, 2014 to February 12, 2016, (b) have regarded the law as uncertain starting in February 12, 2016, and (c) have concluded the Federal Circuit decision was highly likely to get reversed after December 2, 2016. Such evidence does not negate all the other evidence that, in a but-for world without the challenged restraints,

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<sup>825</sup> Elhauge Report ¶ 307.

<sup>826</sup> Smith Report n.630.

<sup>827</sup> *Impression Products, Inc. v. Lexmark International, Inc.*, 581 U.S. 360 (2017).

<sup>828</sup> Smith Report ¶ 247.

<sup>829</sup> *Lexmark Intern., Inc. v. Impression Products, Inc.*, 816 F.3d 721 (Fed. Cir. Feb 12, 2016), reversing 9 F.Supp.3d 830 (March 27, 2014).

<sup>830</sup> 560 U.S. 1017 (December 2, 2016).

<sup>831</sup> SCOTUS case reversal rates (2007 – Present), [https://ballotpedia.org/SCOTUS\\_case\\_reversal\\_rates\\_\(2007\\_-\\_Present\)#2016](https://ballotpedia.org/SCOTUS_case_reversal_rates_(2007_-_Present)#2016) (accessed 3/3/2023). If we broaden the time range from 2007-2021, the Supreme Court reverses in 71% of all cases and in 71% of Federal Circuit cases.

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rational market participants would have entered by May 21, 2017 or at least actively made plans to enter after the Supreme Court rendered its decision on the *Lexmark* issue.

412. Nonetheless, to address the concern that a factfinder might conclude that in the but-for world entrants would not have entered until after the May 30, 2017 *Lexmark* Supreme Court decision, counsel have asked me to also calculate damages assuming that the earlier but-for entry date might be May 31, 2017. Damages with this alternative but-for entry date are now included in my updated damages tables below.

413. To be clear, I am not offering an opinion as to whether, in the but-for world, rival entry definitely *would* have occurred on May 21, 2017, May 31, 2017, or instead when it occurred in the actual world. I leave resolution of that issue to the factfinder. I have been asked by counsel to calculate damages on alternative scenarios of when the but-for entry date might have been, and I review the evidence simply to establish that there is sufficient evidence for the alternative scenarios to make it reasonable to calculate damages based on those scenarios, which I did in my initial report and do so in this rebuttal report. My methodology can also easily calculate damages based on any alternative but-for entry date that a factfinder might find.

## *2. Evidence That Rivals Could Have Repaired X/Xi EndoWrists in the But-for World*

414. Dr. Smith criticizes me for calculating damages on X/Xi-compatible EndoWrist models because the corresponding repair services have not been sold in the actual world.<sup>832</sup> Dr. Smith's approach again conflicts with both the economics and the evidence.

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<sup>832</sup> Smith Report ¶ 248. Dr. Smith also criticizes me for failing to exclude from damages all S/Si instrument models that IRCs did not offer to repair in the actual world, Smith Report ¶ 249. However, Dr. Smith is inaccurate when he states that my damages included "All S/Si . . . . EndoWrist Instrument Models" and that his alternative damages model includes all "EndoWrist Instrument Models Included in Third-Party Pricing Sheets". Smith Report Table 3. In fact, to be conservative, I excluded every S/Si model that IRCs did not offer in the actual world, with the exception that I overlooked the 428090 (Single-Site 5 mm "Permanent Cautery (hook)"), which is the only S/Si model that Dr. Smith excludes from damages that I did not exclude. See Smith Report Workpapers ("Adjusted Damages.xlsx" tab "Elhauge\_damages" with productplatform field value of "da Vinci S" or "da Vinci Si", compare observations with relevant\_model field value



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415. On the economics, Dr. Smith once again errs by conflating the actual world with the but-for world by assuming that, if third party companies could not have repaired X/Xi-compatible EndoWrists in the actual world with the challenged restraints, they also could not have done so in the but-for world without the challenged restraints. This contradicts the economic definition of a but-for world, which constitutes how things would have been different if the challenged restraints had not occurred. The flaw in Dr. Smith’s damages theory can easily be seen by considering the extreme case. Suppose a monopolist engages in the most exclusionary possible conduct: imposing a foreclosure so severe that it prevents any firm from ever entering the market. According to Dr. Smith’s flawed damages theory, one must assume that no firm would have entered the market in the but-for world either, so that damages are \$0, even though in fact damages from preventing all market competition are enormous.

416. On the facts, Dr. Smith does not dispute “that in the absence of the challenged conduct, third parties would have had a stronger incentive to develop a workaround for X/Xi EndoWrist counter.”<sup>833</sup> Rather, he asserts that: “Even if one accepts that third parties would have a greater incentive to invest in technology to bypass X/Xi EndoWrist counters, there is no evidence that they would have had an increased **ability** to do so, especially as early as 2017.”<sup>834</sup> His claim that there is “no evidence” that IRCs could have developed the ability with greater and earlier investment rests on his argument that “evidence indicates that third parties have **not** yet developed a process for resetting X/Xi EndoWrist instruments. Hence, it is unclear when or if third parties would have developed a way to reset X/Xi EndoWrists in the relevant but-for world.”<sup>835</sup> In short, he claims that if they have not in fact done so in the

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is 1 (his “all models” selection) and 0 (his “offered models” selection). I now exclude this model from my damage calculations in this report, which has less than a 1% effect on damages. In my initial report, I also, to be conservative, excluded damages for clip applicators because their limit counter was measured in closures instead of uses, *see* Intuitive-00000105-128 at 108 (showing closure limit); Elhauge Report Exhibits D & E (listing of S/Si and X/Xi EndoWrist models included in damages), even though resets for it *were* included in third-party pricing sheets, *see* REBOTIX162208-212 at 212 (420003 Small Clip Applier, 420230 Large Clip Applier, 420327 Medium-Large Clip Applier) and Restore-00000003-004. Dr. Smith also excludes clip applicators from damages (even though that choice is not conservative for a defense expert), *see* Smith Report Workpapers (“Adjusted Damages.xlsx” tab “Elhauge\_damages”), which is why he is being inaccurate when he states that his alternative damages model includes all “EndoWrist Instrument Models Included in Third-Party Pricing Sheets”. Smith Report Table 3.

<sup>833</sup> Smith Report ¶ 248.

<sup>834</sup> Smith Report ¶ 239 (emphasis in original).

<sup>835</sup> Smith Report ¶ 248 (emphasis in original).

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actual world, that means there is “no evidence” that they could have done do in the but-for world. But his assertion that there is “no evidence” that IRCs could and would have developed an ability to repair X/Xi instruments in the but-for world conflicts with a lot of contrary evidence that suggests IRCs are figuring out how to repair X/Xi EndoWrists and would have done so earlier but for Intuitive’s challenged conduct. That evidence includes, but is not limited to:

- a) Rebotix efforts to reset the use counter in X/Xi EndoWrists started in late 2014, but were paused in 2015 to prioritize working on the S/Si EndoWrists.<sup>836</sup> Without the challenged restraints, Rebotix would in 2015 have had incentives to invest the additional sums needed to develop methods of repairing both X/Xi and S/Si EndoWrists, because there would have been far more financial gains from doing so.
- b) Glenn Papit of Rebotix testified that “Rebotix determined not to invest the resources to finalize a reset to the X/Xi usage counter because doing so would be futile in the face of Intuitive’s reaction to hospitals using Rebotix’s services.”<sup>837</sup>
- c) Rebotix subsequently restarted these efforts and Stan Hamilton of Rebotix testified that, as a result, Rebotix has “figured out how to reset the use counter for Xi instruments.”<sup>838</sup> This provides clear evidence that there was no technical obstacle making it impossible for rivals to reset counters on X/Xi instruments.
- d) Kevin Ferreira of Iconocare was expecting to get 510(k) clearance for repairing all types of EndoWrists.<sup>839</sup>
- e) Kevin May of Restore likewise testified that Intuitive’s exclusionary conduct “absolutely caused delays and harm to our business. We had been counting on the revenue that we were generating from the repair business to fund being able to do additional R&D efforts, to grow the business, and to grow the Xi

<sup>836</sup> Elhauge Report ¶¶ 275, 309.

<sup>837</sup> Elhauge Report ¶ 275 n.649 (quoting *Rebotix Repair LLC vs. Intuitive Surgical, Inc.*, Case No. 8:20-cv-02274, Declaration of Glenn Papit, December 8, 2021, at ¶ 9).

<sup>838</sup> Elhauge Report ¶ 275 & n.651 (quoting Hamilton (in *In re: da Vinci*) Dep. at 42:1-11 (“So from a technical perspective today – as of today, Rebotix has figured out how to reset the usage counter for Xi instruments. Is that what you’re saying? [...] THE WITNESS: I agree. Yes.”); *id.* at 32:8-13 “Q Do you know of any technical reason why Rebotix would not have been able to repair X and Xi chips associated with the extended use program if it had started earlier? [] THE WITNESS: No.”)

<sup>839</sup> Ferreira (in *In re: da Vinci*) Dep. at 113:13-20

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business and to do the research development for the Xi.”<sup>840</sup> This provides direct evidence that without the challenged restraints, Restore could have made the additional investments to develop its ability to repair X/Xi models earlier.

- f) Clif Parker of Restore indicated Restore was [REDACTED]

[REDACTED] <sup>841</sup>

[REDACTED] <sup>42</sup> He also testified, “We have lots of prospective [X/Xi] customers that we could sign contracts with, but we have not done so at this point cause it's futile until we get some sort of relief from Intuitive blocking.”<sup>843</sup>

- g) Kevin May of Restore likewise testified [REDACTED]

[REDACTED] <sup>44</sup>

- h) Multiple companies are currently working on a method to repair X/Xi EndoWrists, and economic logic suggests that in the absence of the challenged conduct in the but-for world they would have an incentive to do so even earlier.<sup>845</sup>
- i) Experience repairing S/Si EndoWrists was relevant to getting into the X/Xi repair business because physically much of the EndoWrists are the same.<sup>846</sup> Further, much of the equipment for repairing X/Xi EndoWrists also was common to S/Si EndoWrist repairs.<sup>847</sup>

<sup>840</sup> Elhauge Report ¶ 309.

<sup>841</sup> Parker (in *In re: da Vinci*) Dep. at 30:24-31:2.

<sup>842</sup> Elhauge Report ¶ 275 & n.652 (quoting Parker (in *In re: da Vinci*) Dep. at 141:14-21.)

<sup>843</sup> Parker Dep. at 139:23 - 140:08; *see also* 141:23 - 142:12.

<sup>844</sup> Elhauge Report ¶ 275 & n.652 (quoting May (in *In re: da Vinci*) Dep. at 97:5- 8

<sup>845</sup> Elhauge Report, ¶¶263-264.

<sup>846</sup> Elhauge Report ¶ 276.

<sup>847</sup> *Id.* Because of this link to S/Si repairs, I excluded from damages all X/Xi models that that did not match the S/Si models that I included. *See, e.g.,* Elhauge Report Exhibits D & E (listing of S/Si and X/Xi EndoWrist models included in damages). Dr. Smith is thus inaccurate when he states that my damages included “All . . . X/Xi EndoWrist Instrument Models”. Smith Report Table 3 and Workpapers (“Adjusted Damages.xlsx” tab “Elhauge\_damages”). My damage calculations in this rebuttal report exclude all X/Xi models that that do not match the S/Si models that IRCs have already offered to repair, and thus now also exclude the X/Xi version of the Single-Site 5 mm “Permanent Cautery (hook)”. *See supra* note 832 (noting that I now also exclude that S/Si model).

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- j) Kurt Humphrey, who was asked by counsel for SIS to “provide opinions about the encryption utilized on Intuitive Surgical Inc. (‘Intuitive’) X and Xi EndoWrist products,” opines: “In sum, Intuitive substantially increased the difficulty of reverse engineering the EndoWrist use counter from the S/Si EndoWrists to the X/Xi EndoWrists. Although this does not make reverse engineering of the X/Xi impossible, it makes it more difficult, time-consuming, and expensive. ***This reverse engineering work could have been performed at any time in the last five years, if not earlier, had the appropriate funding and resources been available.***”<sup>848</sup>

417. To be clear, I am not offering an opinion that rivals definitely *would* have developed an ability to repair X/Xi EndoWrist models in the but-for world. I leave resolution of that disputed issue to the factfinder and separately calculate damages with and without X/Xi EndoWrists.<sup>849</sup> My analysis thus applies regardless of what the factfinder decides about this disputed factual issue. I review the evidence simply to establish that there is sufficient evidence that IRCs could have repaired X/Xi EndoWrist models in the but-for world to make it reasonable to calculate damages based on that scenario.

418. Even less justifiably, Dr. Smith also assumes that even if the challenged restraints had never existed, rivals in the future would never have been able to offer repairs on X/Xi EndoWrists.<sup>850</sup> He provides no support for this assumption.

### *3. Evidence That Rivals Could Have Serviced X/Xi Da Vinci Robots in the But-for World*

419. As with his other criticisms of my damages calculations, Dr. Smith’s argument that there should be zero damages on X and Xi da Vinci servicing is based on the flawed logic that third parties would not have been able to service X or Xi robots in the but-for world because they did not do so in the actual world.<sup>851</sup> Dr. Smith’s logic contradicts the basic premise of but-for analysis: that companies

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<sup>848</sup> Expert Report of Kurt Humphrey, *Surgical Instrument Service Company, Inc. vs. Intuitive Surgical, Inc.*, 12/2/2022 (Humphrey (in SIS) Report) at ¶36 (emphasis added). *See also, id.* at ¶¶ 10-11 (“I am submitting this report at the request of Haley Guiliano LLP, counsel for Surgical Instrument Services Company, Inc. (‘SIS’)...” “I have been asked to provide opinions about the encryption utilized on Intuitive Surgical Inc. (‘Intuitive’) X and Xi EndoWrist products.”).

<sup>849</sup> Elhauge Report ¶¶ 402, 408, 411 & Tables 5-7.

<sup>850</sup> Smith Report ¶ 269.

<sup>851</sup> Smith Report ¶ 259.



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could have taken different actions in the absence of the challenged restraints. As with EndoWrist repair, economic logic indicates that, without the challenged restraints, IRCs would have had more incentives to service X/Xi robots as well as S/Si robots.<sup>852</sup>

420. Dr. Smith simply ignores the evidence that Restore planned to extend its da Vinci robot services to X and Xi models, plans that in the but-for world Restore would have had greater incentives to execute earlier.<sup>853</sup> Dr. Smith also ignores evidence that Restore concluded that being able to service 15 robots was the minimum it needed to enter into a robot servicing market, a minimum that Restore would have been far more likely to achieve for X and XI robots in a but-for world without the challenged restraints barring it from servicing those robots.<sup>854</sup>

421. My initial report also pointed out that, “Given that da Vinci servicing was linked to compatible EndoWrist repair, it is logical that in a but-for world with unrestrained rival repair of X/Xi-compatible EndoWrists, rivals would also provide X/Xi servicing.”<sup>855</sup> In support, I cited deposition testimony from Restore that its entry into the da Vinci service market paralleled its entry into the EndoWrist repair markets.<sup>856</sup> Dr. Smith’s only response is that “based on Professor Elhauge’s logic, given that third parties have not been able to commercialize reset X/Xi EndoWrist instruments, third parties also would not be able to provide X/Xi servicing.”<sup>857</sup> His response makes no sense, as it is not based on my logic, but rather on Dr. Smith once again mistakenly conflating the actual and but-for worlds by assuming that because IRCs did not repair X/Xi EndoWrists in the actual world, they could not have done so in the but-for world either. As noted above in Section VII.A.2, his reasoning is flawed and contrary to evidence that IRCs would have repaired X/Xi EndoWrists in the but-for world. Thus, it perfectly fits my logic that the evidence that IRCs would have repaired X/Xi EndoWrists in the but-for world also indicates they would have serviced X/Xi robots in the but-for world.

422. Finally, I pointed out that, as far as I knew, there were no “technical barriers to doing servicing on the da Vinci S, X, and Xi relative to the da Vinci Si, on which Restore successfully performed servicing.”<sup>858</sup> Apparently Dr. Smith is unaware of

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<sup>852</sup> See also, Elhauge Report Section V.A and n.976.

<sup>853</sup> Elhauge Report ¶ 312.

<sup>854</sup> See Parker (in *In re: da Vinci*) Dep. at 151:13-15, cited in Elhauge Report n.976.

<sup>855</sup> Elhauge Report n.976.

<sup>856</sup> See Parker (in *In re: da Vinci*) Dep. at 164:21-165:6, cited in Elhauge Report n.976.

<sup>857</sup> Smith Report ¶ 259.

<sup>858</sup> Elhauge Report n.976.

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any technical barriers either, because he does not cite any. Rather, his only response to this point is that the Xi system is a more advanced technology.<sup>859</sup> But the fact that Restore planned to extend its da Vinci robot services to X and Xi models indicates that it did not think that those technological differences would create technical barriers that would prevent Restore from servicing X and Xi models.<sup>860</sup>

423. To be clear, I am not offering an opinion that rivals definitely *would* have serviced X and Xi robots in the but-for world. I leave resolution of that disputed issue to the factfinder, and I separately calculated damages for “for S, Si, X, and Xi servicing in case the tribunal or factfinder sustains the claims relative to only one or some of those models.”<sup>861</sup> My analysis thus applies regardless of what the factfinder decides about this disputed factual issue. I review the evidence simply to establish that there is sufficient evidence that IRCs could have serviced not only S and Si robots, but also X and Xi robots in the but-for world to make it reasonable to calculate damages based on that scenario.

424. Even less justifiably, Dr. Smith also assumes that even if the challenged restraints had never existed, rivals in the future would never have been able to offer servicing on X/Xi da Vinci Robots.<sup>862</sup> He provides no support for this assumption.

### ***B. There Are Not Zero or Negative Damages***

425. Dr. Smith provides no calculations that arrive at zero, let alone negative, damages. At deposition, he stated that he arrived at “zero damages” based on his opinion regarding “Intuitive’s liability . . . that their conduct on balance is procompetitive.”<sup>863</sup> In other words, all he concluded was that if Intuitive’s conduct was not anticompetitive, then there are no anticompetitive damages. He thus offered no method that could calculate zero damages if Intuitive were found liable. Instead, he concluded that damages would be zero if Intuitive were not liable.

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<sup>859</sup> Smith Report ¶ 259.

<sup>860</sup> Elhauge Report ¶ 312.

<sup>861</sup> Elhauge Report ¶ 416 & Table 8.

<sup>862</sup> Smith Report ¶ 269.

<sup>863</sup> Smith (in *In re: da Vinci*) Rough Dep. at 232:10-20. Likewise, Dr. Smith assumes zero damages from use limit suppression based on his assumption that plaintiffs would prevail only against the contract restrictions, not against the use limit suppression, and that in the but-for world the use limits would be the same as in the actual world. See Smith (in *In re: da Vinci*) Rough Dep. at 232:21-233:11 (assuming that “plaintiffs will prevail on their claims” means that the contract restrictions will be “no longer enforceable” and that in the but-for world the instruments “are designed the way they are with the instrument counters, exactly the way they are.”).



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426. In his damages analysis, Dr. Smith also repeats his baseless claims that (1) if EndoWrist repair or da Vinci service prices were reduced in the but-for world, Intuitive might have compensated by raising its robot prices and (2) that might have responded to the entry of rivals into the EndoWrist repair market by raising new EndoWrist prices, either which he argues could have resulted in “negative” damages.<sup>864</sup> Dr. Smith offers no evidence that this would have happened, no evidence that Intuitive ever contemplated either pricing strategy, nor any calculation of how it might affect damages if it did. Moreover, as I already rebutted both those claims above.

- a) I showed that his first claim conflicts with his own data, which indicates that: (i) when, in response to competitive pressure, Intuitive lowered per-use X/Xi EndoWrist prices from 2020-2021, it did not raise Xi robot prices, but rather lowered them; (ii) when Intuitive was actually faced with increased competition from rivals providing EndoWrist S/Si repair from 2018-2021, Intuitive reduced real prices not only for da Vinci instruments, but also for da Vinci servicing, and could not have compensated by increasing prices for S/Si robots because there were no meaningful sales of them from 2018-2021; and (iii) generally, recent declines in Intuitive prices for both EndoWrists and da Vinci servicing have coincided with decreases, not increases, in da Vinci robot pricing.<sup>865</sup>
- b) I showed that his second claim conflicted with: (i) his own admission that Intuitive’s Extended Use program was a response to competitive pressure and his own data shows it lowered the per-use price; (ii) his own argument that the restraints enabled Intuitive to maintain the high prices and profits necessary to fund innovation; (iii) that fact that in response to competition from IRCs, Intuitive’s Project Dragon made proposals to offer lower prices.<sup>866</sup>

427. Dr. Smith not only provides no calculation arriving at zero or negative damages, but also provides no quantitative evidence that could be used to arrive at a zero or negative damage value. There is no numeric value in the Smith Report by which supposed procompetitive effects on prices (or on anything else) could be used to adjust my damage calculation to zero or below.

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<sup>864</sup> Smith Report pp. 14-15, ¶¶ 243-244, 256.

<sup>865</sup> See *supra* Section V.B.4.

<sup>866</sup> See *supra* Section V.B.4.

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### *C. Quantification of Damages for EndoWrist Repair and Replacement*

428. Dr. Smith also purports to criticize my calculation of EndoWrist repair and replacement damages based on the issues of (1) demand complementarity, (2) FDA clearance, (3) calculation of combined higher use limits and lower prices, and (4) assumptions regarding substitution. I address each of these in its own section below.

#### *1. Demand Complementarity Is Reflected in the Pricing Analysis I Use to Calculate Damages and Considering Its Output Effects Would Only Increase Damages*

429. Dr. Smith claims that my analysis “ignores the demand complementarity of the components of the da Vinci Surgical System.”<sup>867</sup> His claim is wrong both on the facts and on the economic implications. His claim is wrong on the facts because the price benchmarks that I use to calculate damages all reflect the effects of demand complementarity. The Project Dragon benchmark for but-for EndoWrist prices reflects Intuitive’s own price analysis, and it is reasonable to assume that Intuitive was not ignoring demand complementarity.<sup>868</sup> The da Vinci servicing price benchmark reflects aftermarket service being performed by an OEM, which again is safe to assume reflects knowledge of demand complementarity.<sup>869</sup>

430. Dr. Smith’s claim is also wrong on the economic implications because the effect of demand complementarity is to *increase* the economic harm created by the challenged restraints by worsening the output effect. Demand complementarity indicates that anticompetitively inflated prices for EndoWrist instruments and da Vinci servicing reduced the quantity of da Vinci robots being purchased.<sup>870</sup> Any hospitals that did not purchase a da Vinci robot due to the inflated EndoWrist and da Vinci service prices would also purchase a lower quantity of EndoWrists and da Vinci service. According, demand complementarity indicates that the output for da Vinci robots, EndoWrists, and da Vinci service have all been restrained to an even greater extent than described in my initial report.<sup>871</sup> Such negative effects on output would only increase the economic harm created by the challenged restraints.

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<sup>867</sup> Smith Report ¶ 239.

<sup>868</sup> Elhauge Report ¶¶ 394-397.

<sup>869</sup> Elhauge Report ¶ 413.

<sup>870</sup> PINDYCK & RUBINFELD, MICROECONOMICS 24 (8<sup>th</sup> ed. 2013) (“Goods are complements when an increase in the price of one leads to a decrease in the quantity demanded of the other.”).

<sup>871</sup> Elhauge Report ¶¶ 336-339, 400 (describing the output effects of higher EndoWrist prices).

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431. To be conservative, my damages analysis assumed output would be no higher in the but-for world.<sup>872</sup> Taking into account demand complementarity just underscores how conservative my assumption is, in a way that makes the calculated damages understate the full economic harm created by the challenged restraints. Tellingly, Dr. Smith offers no calculation of how taking into account demand complementarity would affect damages, but had he done so, the economics make clear that it could only increase damages.

*2. No Additional Adjustment to My Damage Calculations Is Needed for FDA Clearance*

**i. Dr. Smith’s Flawed Claims About the Role of FDA Clearance in My Damage Calculation**

432. Dr. Smith claims that my analysis “disregards the influence of FDA clearance on the demand for third-party reset EndoWrist instruments.”<sup>873</sup> That is not true. My Initial Report addressed the issue of FDA clearance at length, and I detail above how Dr. Smith’s claims about FDA clearance ignore copious evidence to the contrary.<sup>874</sup> I also explained at length why FDA clearance issues would not negate price effects.<sup>875</sup> In any event, my EndoWrist damages analysis conservatively assumes a but-for 20% discount based on the prices that Intuitive’s Project Dragon planned to offer for a mix of new and refurbished EndoWrists.<sup>876</sup> Intuitive’s Project Dragon analysis concluded that 510(k) clearance was unnecessary for its refurbished EndoWrists,<sup>877</sup> and its contemplated prices would rationally have incorporated any “influence” of any perceived need for FDA clearance on market demand.

433. Dr. Smith falsely asserts that I conduct “no analysis to assess the extent to which any hospitals would purchase reset EndoWrists from third parties without FDA clearance in the but-for world.”<sup>878</sup> However, in addition to the evidence summarized in the preceding paragraph, I detailed evidence that Intuitive and industry analysts projected but-for shares for rivals offering EndoWrist repairs that ranged from 10-15%, and either modeled shares ranging up to 50% or concluded

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<sup>872</sup> Elhauge Report ¶ 400.

<sup>873</sup> Smith Report ¶ 239; *see also id.* ¶ 245.

<sup>874</sup> *See supra* Sections II.B.2.ii & V.B.4.

<sup>875</sup> *See supra* Section V.B.4.

<sup>876</sup> *See* Elhauge Report ¶¶ 396-397.

<sup>877</sup> *See* Elhauge Report ¶ 283.

<sup>878</sup> Smith Report ¶ 245.

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those projected shares would be even higher without the challenged restraints.<sup>879</sup> I also explained why such but-for rival market shares would more than suffice to provide the estimated but-for price effect.<sup>880</sup>

434. Perhaps Dr. Smith means to say that I have not calculated a precise but-for market share for rivals. But calculating a precise but-for market share for rivals is not necessary for my damages analysis, because it makes the conservative assumption to rely on the 20% price discount for EndoWrists that was contemplated by Intuitive as part of Project Dragon.<sup>881</sup> Thus, those hospitals that in the but-for world would have bought from Intuitive rather than rivals (whether because of concerns about FDA clearance or any other reason) would also have received the benefit of the 20% lower prices for EndoWrists that Intuitive would have charged in the but for world. Those hospitals that would have bought from rivals in the but-for world would instead have paid 45% lower prices, and thus suffered even more economic harm.<sup>882</sup> However, because I conservatively assumed that all hospitals would have only paid 20% less, my damages analysis does not require a) determining how many hospitals would have switched to rivals in the but-for world, or b) identifying who they would have been.<sup>883</sup> Taking into account the but-for rival share thus just underscores how conservative my assumption is, in a way that makes the calculated damages understate the full economic harm created by the challenged restraints. Tellingly, Dr. Smith offers no calculation of how taking into account the precise but-for rival market share would affect damages, but had he done so, the economics make clear that it could only increase damages.

## **ii. Dr. Smith’s Flawed Claim That There Are No Damages on EndoWrist Models for Which Repair Has Been Given FDA Clearance**

435. In addition to disputing damages for foreclosing rival EndoWrist repair sales that lacked FDA clearance,<sup>884</sup> Dr. Smith claims that there should be zero damages in connection with sales of rival EndoWrists *with* FDA clearance.<sup>885</sup> His argument thus amounts to a “Catch-22” claim that either the absence or presence of FDA clearance for rivals means that no damages can result. He bases his argument that there should

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<sup>879</sup> See Elhauge Report ¶ 357; *supra* Section V.B.4.

<sup>880</sup> See *supra* Section V.B.4.

<sup>881</sup> See Elhauge Report ¶¶ 396-397.

<sup>882</sup> See Elhauge Report ¶ 397.

<sup>883</sup> See Elhauge Report ¶ 397.

<sup>884</sup> Smith Report ¶ 245.

<sup>885</sup> Smith Report ¶ 246 (“...damages in connection with sales of cleared reset EndoWrist instruments should be zero”).

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be zero damages in connection with sales of rival EndoWrists with FDA clearance on two flawed premises: (a) that the SLSAs have not prohibited hospitals from using repaired EndoWrists with FDA clearance, and (b) that there is no evidence that Intuitive delayed rival FDA clearance.

436. First, although Dr. Smith did not mention it in his report, in his deposition for the first time he asserted that the SLSAs did not prohibit hospitals from purchasing repaired EndoWrists with FDA clearance.<sup>886</sup> Dr. Smith has provided no evidence to support his assertion that the SLSAs did not prohibit hospitals from purchasing repaired EndoWrists with FDA clearance. In his report, he repeatedly emphasizes the opposite claim: that Intuitive's SLSAs have always required buyers to buy any EndoWrists from Intuitive.<sup>887</sup> Further, as noted above in Part IV.A, Dr. Smith explicitly confirms the evidence I collected showing that Intuitive's SLSAs required that its customers buy EndoWrists only from Intuitive and prohibited its customers from getting EndoWrists repaired by third parties. None of the SLSA contractual provisions cited by him or me for this proposition contain any exception for the purchase of repaired EndoWrists by third parties that have FDA clearance.<sup>888</sup> Likewise, none of the statements by Intuitive or its executives characterizing its SLSAs as prohibiting the use of third parties to repair EndoWrists make an exception for third parties that have FDA clearance.<sup>889</sup>

437. Moreover, Dr. Smith's argument here is internally inconsistent with his argument elsewhere in his report that enforcing the prohibition on purchasing repaired EndoWrists from rivals was vital to prevent a loss of profits that would disincentivize Intuitive's investment in innovations.<sup>890</sup> That argument applies just as much to rivals with FDA clearance, indeed more so given his claim that hospitals are more likely to switch to rivals with such clearance.<sup>891</sup> Dr. Smith's own argument

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<sup>886</sup> Smith (in In re: da Vinci) Dep. at 187:1-12 ("THE WITNESS: Well, I think one thing that comes to mind is that the achievement of FDA clearance, which I understand has been for one device by one company, it is my understanding that Intuitive would not enforce some terms of the SLSA on that instrument, that -- that they -- that's -- in my damages section of this report, I've discussed why there shouldn't be any damages on that instrument because Intuitive hasn't -- would not -- it would not affect that instrument's ability to -- the contract wouldn't affect that abil- -- the ability of that instrument to be sold.").

<sup>887</sup> See *supra* Section II.B.1.iv.

<sup>888</sup> See Smith Report ¶ 84; Elhauge Report ¶¶ 242-244.

<sup>889</sup> Elhauge Report ¶¶ 242-244 & nn.560-568.

<sup>890</sup> See *supra* Section VI.A.

<sup>891</sup> Smith Report ¶ 245.



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thus indicates that Intuitive would have had no economic incentive to refrain from enforcing the SLSA prohibitions against rivals with FDA clearance.

438. Dr. Smith relatedly argues that although Iconocare (which Restore used to apply for FDA clearance) obtained FDA clearance for one S/Si instrument, he is “not aware of any evidence... that Intuitive has hindered Iconocare from sales of resets for the EndoWrist instrument that was cleared.”<sup>892</sup> But he himself acknowledges that this clearance was not obtained until September 30, 2022,<sup>893</sup> and there is little discovery of, and no data from, the period after that time given the fact discovery cut off of November 10, 2022.<sup>894</sup>

439. Second, Dr. Smith claims that he is “not aware of any evidence that Intuitive delayed Iconocare’s achievement of FDA clearance.”<sup>895</sup> Even if Dr. Smith is unaware of it, there is evidence that Intuitive delayed FDA 510(k) clearance for Iconocare’s application. First, Rick Ferreira of Iconocare testified that obtaining clearance was delayed and difficult because the FDA kept raising “questions that didn’t make sense” or demands for “crazy testing”, whose nature made him concerned that Intuitive was interfering with the process.<sup>896</sup> Second, Clif Parker of Restore (which funded Iconocare’s efforts to obtain 510(k) clearance)<sup>897</sup> testified that “we anticipated having or utilizing funds from the repair business to—to fund the 510K, so with Intuitive’s actions blocking our sales efforts, that greatly limited our ability to generate revenue from the repair business.”<sup>898</sup>

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<sup>892</sup> Smith Report ¶ 246.

<sup>893</sup> Smith Report ¶ 246 & n.629 (citing Letter from U.S. FDA to Rick Ferreira at Iconocare Health Re: K210479 dated 11/15/2022, available at [https://www.accessdata.fda.gov/cdrh\\_docs/pdf21/K210478.pdf](https://www.accessdata.fda.gov/cdrh_docs/pdf21/K210478.pdf) (with attached FDA letter dated 9/30/2022)); May (in *In re: da Vinci*) Dep. at 79:20-22 (Nov. 3, 2022) (“Q. Does Restore currently have the 510(k) – 510(k) clearance for EndoWrist remanufacturing? A. We have 510(k) for the 420179 EndoWrist.”).

<sup>894</sup> Joint Stipulation and Order to Modify Case Schedule, 4/14/2022.

<sup>895</sup> Smith Report ¶ 246.

<sup>896</sup> Ferreira (in *In re: da Vinci*) Dep. at 157-162. *See also, id.* at 97-98 (the S/Si-EndoWrist clearance was “one of the toughest we’ve ever had to do in 20 years. . . . The challenge really was they kept asking us questions that didn’t make any sense.”).

<sup>897</sup> Parker (in *Restore*) Dep. at 145:16-24 [REDACTED]

<sup>898</sup> Parker (in *In re: da Vinci*) Dep. at 129:18-25.



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440. In any event, even if one agreed with Dr. Smith’s flawed claim that “damages in connection with sales of a cleared reset EndoWrist instrument should be zero,”<sup>899</sup> that would not affect damages. To begin with, because my damages calculations are all limited to damages on Intuitive’s sales, none of my calculations included any damages in connection with rival sales of any reset EndoWrist instrument, cleared or not. Further, the only cleared reset EndoWrist instrument that Dr. Smith identifies is one Iconocare S/Si instrument that obtained clearance on September 30, 2022.<sup>900</sup> Any adjustment one might make for it could not affect any of my EndoWrist damages calculations, given that they were calculated for sales through December 31, 2021 (which was through the end of the data produced by Intuitive).<sup>901</sup> Nor does Dr. Smith offer any calculation about how taking his claim into account would alter either (a) the calculation of damages or (b) the estimate of continuing effects that could be relevant to injunctive relief.

### *3. I Correctly Calculated Combined Damages from a Scenario with But-For Higher Use Limits and Lower Prices*

441. Dr. Smith offers various economically erroneous criticisms specific to my calculation of combined damages from a but-for scenario with higher use limits and lower prices. I address these below.

442. To begin with, Dr. Smith appears to conflate my calculation of damages under certain but-for scenarios with the idea that I am opining that those scenarios necessarily would have occurred. He criticizes my analysis because it allegedly “postulates that Intuitive would be incentivized to give a 20 percent price discount **and** double its use limit in the but-for world.”<sup>902</sup> While a 20% price discount coupled with increased use limits (which are not quite the doubled limits that Dr. Smith claims<sup>903</sup>) is one scenario under which I modeled damages, I did not opine that this scenario definitely “would” happen in the but-for world, but rather I opined that it

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<sup>899</sup> Smith Report ¶ 246.

<sup>900</sup> Smith Report ¶ 246.

<sup>901</sup> Elhauge Report ¶¶ 402, 408, 411. As noted in My Initial Report, to the extent that additional data is produced I reserve the right to supplement my analysis. Elhauge Report ¶ 11.

<sup>902</sup> Smith Report ¶ 251 (emphasis in original).

<sup>903</sup> Dr. Smith is incorrect when he asserts that that I assumed that all current use limits would be “double” in the but-for world. Smith Report ¶ 251. Rather, I assume that all current use limits would be increased to at least 20. *See infra* Section VII.C.5. Because some instruments have current use limits between 10 and 20, they would increase by less than double in the but-for world. *See* Elhauge Report Table 4. Further, because some instruments have current use limits of 20 or higher, they would not increase at all the but-for world that I model. *See infra* Section VII.C.5.

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*could* happen and therefore was reasonable to model.<sup>904</sup> As discussed below, I have provided evidence that indicates it is reasonable to conclude Intuitive would do both, but I have left resolution of that issue to the jury by separately calculating damages under the possibilities that Intuitive would do one or the other or both.<sup>905</sup>

443. In support of the possibility that the but-for world would feature both lower prices and higher use limits, I provided evidence that firms would rationally lower prices and raise use limits in response to greater competitive pressure, and that Intuitive in fact did or had plans to do each of them.<sup>906</sup> The fact that lowering prices and raising use limits are both competitive responses does not mean that a company could not do both. Indeed, it is typical for increased competition to both lower prices and improve quality, which is what is at issue here. Further, Dr. Smith's assumption that which combination to choose in the but-for world would turn solely on Intuitive's incentives ignores my initial report's point that "if the factfinder agrees that the use limits were illegal restraints, those use limits would never have existed in the but-for world."<sup>907</sup> Thus, in this scenario, there would necessarily be higher use limits, coupled with the lower prices that result from greater competition with rivals.

444. Dr. Smith argues that lower prices and higher use limits are simply strategic substitutes, because the latter lowers the per-use price.<sup>908</sup> But the conservative methods I used to estimate the magnitudes of the lower prices and higher use limits do not indicate that doing both would make the estimated magnitudes of the price discount lower or the use limit increase smaller. My estimated magnitude of the but-for use limit increase (to at least 20 uses) is based not on its effect on per-use pricing, but rather on a conservative estimate of the extent to which uses could be increased without functional problems, either without any use limits or with use limits that were not so artificially suppressed.<sup>909</sup> Moreover, my estimate is highly conservative because other sources indicated use limits could have been increased to 29-100 uses.<sup>910</sup> My estimated magnitude of the but-for price decrease (20%) is

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<sup>904</sup> Elhauge Report ¶ 409.

<sup>905</sup> Elhauge Report Tables 5-7, 9. *See also infra* Updated Tables 4-7, 9.

<sup>906</sup> Elhauge Report ¶¶ 394-397, 403-405.

<sup>907</sup> Elhauge Report ¶409. Apparently, Dr. Smith ignores this point because he mistakenly defines plaintiffs prevailing on their claims to mean prevailing only in their claims against the contract restrictions and not in their claims against the use limits. *See* Smith (in *In re: da Vinci*) Dep. at 257:6-21; *supra* Section VII.B.

<sup>908</sup> Smith Report ¶ 251.

<sup>909</sup> Elhauge Report ¶¶ 403-405.

<sup>910</sup> Elhauge Report ¶ 405.

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conservatively based on the lowest price discount that Intuitive contemplated as part of Project Dragon, in response to EndoWrist repair competition **with** the challenged restraints.<sup>911</sup> Given that, even with the challenged restraints, Intuitive also contemplated price discounts of 25-40%, and rival repairers were offering price discounts of 45%,<sup>912</sup> it is reasonable to think the true price discount would have been much lower in a but-for world **without** the challenged restraints. Moreover, because I adopt the highly conservative assumption that but-for usage would not have been higher (despite much lower pricing), I conservatively estimate combined damages from the price decrease and output increase that are significantly lower than the sum of the separate damages created by each.<sup>913</sup>

445. Dr. Smith asserts that the combined damages I calculate from the price and use limit effects must be flawed, given that their combined effect amounts to an effective 55.4% discount on Intuitive's prices in the but-for world without the challenged restraints, which exceeds the average 45% price discount that EndoWrist repair rivals offered in the actual world with those challenged restraints.<sup>914</sup> Dr. Smith offers no economic theory or evidence to support his apparent claim that actual prices offered by rivals in a world with the challenged restraints must provide a floor on the but-for prices that firms would offer in a world of free market competition. As I pointed out, in the but-for world, those rivals would likely be able to price below that 45% discount, given that they would likely gain higher economies of scale.<sup>915</sup> The additional price pressure provided by rivals in a world without the challenged restraints would in turn have given Intuitive incentives to respond with further price cuts of its own, which would have given rivals incentives to drop their prices even further in response.

446. Moreover, in assessing the issue, one should take into account the fact that, given that the predicted but-for price reduction is 20%, nearly two-thirds of the "effective 55.4% discount" reported by Dr. Smith is not literally from a price reduction, but rather from the use limit increase. The distinction matters because price reductions have a greater effect on profit margins, given that (unlike use limit increases) they do not reduce the number of EndoWrists that have to be produced and the cost of making them. There is thus every reason to think that, in the but-for world, Intuitive would offer a combination of price cuts and use limit increases that

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<sup>911</sup> Elhauge Report ¶¶ 394-397.

<sup>912</sup> Elhauge Report ¶¶ 394-397.

<sup>913</sup> Elhauge Report ¶¶ 410-411 & n.964 & Tables 5-7, 9.

<sup>914</sup> Smith Report ¶¶ 239, 252.

<sup>915</sup> Elhauge Report ¶ 393.

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would amount to an “effective 55.4% discount” that exceeds the average 45% discount that rivals actually offered with the challenged restraints.

447. Nor is Dr. Smith correct that the “effective 55.4% discount” that he calculates from my estimate of the combined effects of but-for higher use limits and lower prices exceeds any of the yardsticks referenced in my Initial Report.<sup>916</sup> As noted in my Initial Report, another yardstick I used was the pricing for rival MIST robot instruments that were unaffected by similar anticompetitive restraints.<sup>917</sup> I pointed out that a 2019 healthcare system report found that the per-use price for Senhance instruments was 53-76% lower than for da Vinci instruments, with the middle of that range being a 64.5% discount.<sup>918</sup> Similarly, a 2018 industry report that I cited found that the per-use price for Senhance instruments was 46-65% lower than for da Vinci instruments, with the middle of that range being a 55.5% discount.<sup>919</sup> Accordingly, this benchmark suggests but-for discounts of 55.% to 64.5% that either slightly exceed or substantially exceed the effective 55.4% discount found by Dr. Smith from my combined damages analysis. Because Senhance instrument pricing reflects pricing for MIST robot instruments without any anticompetitive restraints, this likely provides a closer picture of the full dynamic effects that unrestrained competition would have on MIST robot instrument pricing.

#### 4. My Damages Analysis Does Not Assume “Near Perfect” Substitution

448. Dr. Smith claims that my analysis is flawed because it “assumes” that EndoWrists reset by IRCs are “near perfect substitutes” with new or repaired EndoWrists supplied by Intuitive.<sup>920</sup> Although my damages analysis did discuss evidence showing that EndoWrists reset by rivals were functionally equivalent to

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<sup>916</sup> Smith Report ¶ 239 (“This effectively reduces Intuitive’s instrument prices by 55.4 percent, resulting in a but-for price that is even lower than Professor Elhauge’s ‘yardsticks’”); *id.* ¶252 (“The effective [] discount exceeds Professor Elhauge’s ‘benchmarks’ when he considers but-for world price discounts.”).

<sup>917</sup> Elhauge Report ¶ 353.

<sup>918</sup> Elhauge Report ¶ 353, citing to Perez & Schwaitzberg (2019) at p. 6 (“a recent internal review by our local healthcare system revealed an average instrument cost of \$3,400 per da Vinci procedure, which is significantly higher than the projected \$800–1,600 instrument costs for Senhance.”). Relative to \$3,400, a price of \$800 is a discount of 76%, and a price of \$1,600 is a discount of 53%. The prices in this study were all calculated on a per-use basis.

<sup>919</sup> In Elhauge Report ¶ 353, I cited a 2018 PiperJaffray report that found that the per-use price for da Vinci instruments was \$1300-2000 compared to a per-use price for Senhance instruments of \$700. Intuitive-00364420, at -440. Relative to \$1300, a price of \$700 is a discount of 46%, and relative to \$2000, a price of \$700 is a discount of 65%.

<sup>920</sup> Smith Report ¶ 244.

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new or repaired EndoWrists supplied by Intuitive, I did so only to underscore why the offering of repaired EndoWrists would predictably lower prices for replacement EndoWrists.<sup>921</sup> None of my damages calculations rests on any assumption that they are near perfect substitutes. Rather, my damages calculation is conservatively based on the fact that, regardless of whether one thought that EndoWrists reset by rivals were lower quality, in response to competitive pressure from them, Intuitive planned to charge a blended 20% discount for a mix of new and refurbished EndoWrists.<sup>922</sup> Buyers would thus suffer damages of at least 20%, because in the but-for world they could have bought the same product from the same firm, Intuitive, only for 20% less. As for any buyers who, in the but-for world, would instead have switched to rivals in exchange for even higher discounts of 45%, their revealed preferences indicate that it must be the case that they rationally would have deemed the price/quality mix offered by those rivals to be even better than paying 20% less for Intuitive EndoWrists.<sup>923</sup> Thus, regardless of any alleged variation in quality, all buyers would suffer damages of at least 20% of the prices they are currently paying for EndoWrists from Intuitive.

### *5. Evidence Suggests That Use Limits Were Suppressed*

449. Dr. Smith accuses my analysis of “speculat[ing] that use limits could be uniformly set to 20 in the but-for world.”<sup>924</sup> This is incorrect on several grounds. To begin with, I do not assume that use limits would be uniformly set to 20 in the but-for world. I instead conclude that in the but-for world, “Intuitive would have increased current use limits on EndoWrists to at least 20 uses.”<sup>925</sup> Intuitive’s current use limits are already above 20 uses for some instruments. For example, the current use limit for “420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM” is 30.<sup>926</sup> There is no reason to assume that in the but-for world, Intuitive would have lowered that current use limit to 20, so I assume that this use limit for this EndoWrist (#420157) would have remained 30 in the but-for world. In short, I conservatively

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<sup>921</sup> Elhauge Report ¶ 395.

<sup>922</sup> Elhauge Report ¶¶ 394-397. I rebut Dr. Smith’s speculation that maybe Intuitive would have ceded price-sensitive buyers to rivals and raised prices to less price sensitive buyers above in Sections V.B.4 & VII.B.

<sup>923</sup> Elhauge Report ¶ 395.

<sup>924</sup> Smith Report ¶ 250. See also, *id.* at ¶ 239.5.

<sup>925</sup> Elhauge Report ¶ 405. I likewise conservatively assumed that “to the extent that, in the but-for world, no use limits would have been permitted or buyers would have used rival repair providers to lift any use limit, buyers would have been able to increase current usage levels to at least 20 uses.” *Id.*

<sup>926</sup> Elhauge Report, Corrected Exhibit E.



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assume that in the but-for world any current use limit below 20 would have been raised to 20, while any current use limit above 20 would have remained the same. There is no economic basis to assume that without the restraints, Intuitive would have lowered current use limits that are already above 20, and Dr. Smith provides no basis for adopting such an assumption.

450. Dr. Smith is also wrong that my assumption that the but-for world current use limits would be raised to at least 20 is speculative. In my initial report, I presented numerous sources of evidence to support the economic inference that in the but-for world current use limits would be raised to at least 20.

- a) I pointed out when competitive pressures finally pushed Intuitive to consider whether its use limits could be extended, “Intuitive staff’s internal analysis was to guess that its instruments could be used about 20 times, and Intuitive in fact tested them to 30 use cycles and used training EndoWrists 30 times. And other Intuitive internal analysis even contemplated use limits of 40 to 100.”<sup>927</sup> It is not speculative to rely on evidence that, in response to competitive pressure, Intuitive did an internal analysis indicating that it could safely increase its use limits to 20 or more uses. Dr. Smith’s contrary approach of simply ignoring this evidence is, in contrast, an improper economic methodology.
- b) I also pointed out: “Other sources like Rebotix and Deutsche Bank have indicated that 29-59 uses was feasible.”<sup>928</sup> Hospital assessment of the evidence likewise indicates that use limits could be raised without compromising functionality.<sup>929</sup> Further, the “FDA recently gave 510(k) clearance for EndoWrists to be used beyond the limit imposed by Intuitive.”<sup>930</sup> It is not speculative to rely on evidence that IRCs and industry analysts concluded that use limits could be raised to at least 29 uses, and that hospitals and the FDA concurred that use limits could be raised. Dr. Smith’s contrary approach of simply ignoring this evidence is, in contrast, an improper economic methodology.
- c) Finally, I pointed out that, “Other evidence and plaintiff expert analysis indicates that there is no reason to impose any use limit on EndoWrists, because hospitals could just use them as many times as they could keep them in working order.”<sup>931</sup> This evidence included Dr. Eugene Rubach’s opinion

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<sup>927</sup> Elhauge Report ¶ 405; *see also id.* ¶¶ 360-361.

<sup>928</sup> Elhauge Report ¶ 405; *see also id.* ¶ 363.

<sup>929</sup> Elhauge Report ¶ 363.

<sup>930</sup> Elhauge Report ¶ 363.

<sup>931</sup> Elhauge Report ¶ 405; *see also id.* ¶¶ 359.



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“that the EndoWrist use limits imposed by Intuitive were arbitrary and unnecessary.”<sup>932</sup> It also included evidence that the “FDA does not require nor limit the number of uses for [Intuitive’s] EndoWrist instruments” and that other surgical instruments, including those compatible with Senhance surgical robots, do not have use limits.<sup>933</sup> It is not speculative to rely on such evidence that no use limits were necessary at all. Dr. Smith’s contrary approach of simply ignoring this evidence is, in contrast, an improper economic methodology.

451. Rather than address any of the evidence detailed in the preceding paragraph, Dr. Smith inaccurately asserts that I “ignore[d] evidence on instrument use limits from Intuitive’s actual Extended Use Program,” which he claims “shows that even after significant testing to improve the instruments, Intuitive was only able to increase use limits for a subset of X/Xi instruments to 12 to 18 uses.”<sup>934</sup> Far from ignoring evidence about Intuitive’s Extended Use Program, my initial report analyzed it, showing that, among other things, although Intuitive increased use limits for a subset of instruments to 12-18 as part of this program, Intuitive’s internal analysis indicated that it could have increased use limits for all its instruments to 20 or more.<sup>935</sup> In contrast, it is an improper economic methodology for Dr. Smith to conclude that “Intuitive was only *able* to increase use limits for a subset of X/Xi instruments to 12 to 18 uses,” based on evidence that was what Intuitive *chose* to do.<sup>936</sup> His methodology amounts to simply assuming that the company alleged to have suppressed its use limits could not have done so because it chose those use limits.

452. Further cutting against Dr. Smith’s claim that Intuitive was only “able” to increase use limits to the 12-18 use limits included in its Extended Use Program is the testimony of Dr. Parnell. As detailed above in Section V.C, Parnell shows, that use limit was set by Intuitive’s marketing personnel and Intuitive intentionally chose not to test its EndoWrists beyond the marketing-determined use limits. Further, those use limits are not an effective means of preventing instrument failure and fail to account for actual wear and tear.<sup>937</sup>

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<sup>932</sup> Elhauge Report ¶ 359 (citing to Expert Report of Dr. Eugene Rubach, 12/1/2022, § VI.).

<sup>933</sup> Elhauge Report ¶ 359.

<sup>934</sup> Smith Report ¶ 250.

<sup>935</sup> Elhauge Report ¶¶ 360-361, 405.

<sup>936</sup> Smith Report ¶ 250 (emphasis added).

<sup>937</sup> See Section V.C (summarizing Dr. Parnell’s analysis).

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453. Moreover, even if we accept Dr. Smith’s erroneous assumption that Intuitive could not have increased use limits any more than it did for the 13 instruments included in its Extended Use Program, Dr. Smith never disputes my showing that in the but-for world, Intuitive would—at a minimum—have adopted the Extended Use Program earlier, as well as tested other EndoWrist models and extended the program to them.<sup>938</sup>

- a) Dr. Smith never responds to my showing that Intuitive executives testified that Intuitive could have tested whether it could increase use limits for its instruments as early as 2012-2013, but did not do so.<sup>939</sup> Even if we accept Dr. Smith’s characterization of Intuitive’s testing under the Extended Use Program, the fact that such testing led Intuitive to raise use limits on 13 instruments in October 2020 indicates that the use limits imposed on those 13 instruments before October 2020 were artificially low, which earlier testing would have revealed.
- b) Nor does Dr. Smith respond to evidence and testimony showing that Intuitive tested only 13 X/Xi instruments, all of which Intuitive concluded could safely have their use limit increased, but could also have done similar testing on S/Si instruments and other X/Xi instruments.<sup>940</sup> As noted above in Section V.C, there is ample evidence that any testing results for X/Xi instruments would, at a minimum, apply to S/Si instruments that were similar and actually had a lower failure rate. The fact that, after finding that *all* the models it tested could have a higher use limit, Intuitive did not bother to test *any* of the other models indicates that safety and functionality were not the only concern.

454. Furthermore, Dr. Smith agrees with me that Intuitive adopted the Extended Use Program as a way to lower the per-use price in response to competitive pressure.<sup>941</sup> This rationally means that in a but-for world in which Intuitive would have faced more competitive pressure earlier, it would have had incentives to do

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<sup>938</sup> Elhauge Report ¶ 362; *supra* Section V.C.

<sup>939</sup> Elhauge Report ¶ 362 & n.866; DeSantis (in *Rebotix*) Dep. at 210:6-8, 171:18-22 (“And, for example, in 2012, you could have tested the instruments and seen, Hey, are we seeing a higher number of uses that we can get out of them, right, using our life testing? A We could have, yes.”).

<sup>940</sup> Elhauge Report ¶ 362 & n.866; Intuitive-000004692-704 at 695-96 (noting that Intuitive’s program only tested 13 X/Xi instruments, but that testing “may expand as instruments are added to the extended lives project.”); DeSantis (in *Rebotix*) Dep. at 172:15-22 (“Q. Well, you could certainly have tested the Si instruments in 2013 to determine whether additional lives were warranted; right? A. We could have, yes. Q. Did Intuitive, in fact, do any such testing? A. I don’t know. Q. Are you aware of any? A. not off the top of my head.”).

<sup>941</sup> Elhauge Report ¶¶ 342-43, 360; Smith Report ¶¶ 205, 220 & nn. 644-645 & Figure 3.

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testing earlier and on more than only 13 instruments. Thus, even under Dr. Smith's erroneous assumption that Intuitive could not have increased use limits any more than it did for the 13 instruments in its Extended Use Program, it is an improper economic methodology for him to ignore such undisputed evidence indicating that in the but-for world Intuitive could and would have adopted its Extended Use Program earlier and applied it to more models.

455. Given that Dr. Smith never disputes my showing that in the but-for world, Intuitive would—at a minimum—have adopted the Extended Use Program earlier and tested other EndoWrist models and extended the program to them, I calculate what those minimum damages would be, even if one adopted the highly conservative assumption that those were the only differences between the actual and but-for world. Table 10 calculates what the minimum damages would be if the only difference in the but-for world were that the Extended Use Program use limits for the 13 X/Xi instruments that it covered would have been in place earlier at one of the posited but-for entry rival dates. As this Table shows, the minimum damages across the class would be roughly \$300-400 million even under this highly conservative assumption.

<b>Table 10. Damages if the Extended Use Program Would Have Started Earlier in the But-For World<sup>942</sup></b>			
<b>Plaintiff</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
Franciscan Health	\$1,068,363	\$1,063,001	\$775,518
Larkin Community Hosp.	\$184,594	\$184,594	\$92,368
Valley Medical Center	\$300,806	\$300,806	\$300,806
Classwide	\$394,264,973	\$392,849,905	\$301,757,609

456. Table 11 calculates what damages would be if the only difference in the but-for world were that the Extended Use Program use limits for the 13 X/Xi instruments that it covered would have been in place not only earlier at one of the posited but-for entry rival dates, but also been applied to other models. Given that the Extended Use Program increased the use limit to 12-18 uses for 13 X/Xi models, this Table assumes that, in the but-for world, those use limit increases would also have applied to the matching 13 S/Si models. Further, given that the smallest increase adopted in the Extended Use Program was to increase the use limit to 12, this Table assumes

<sup>942</sup> IS63 Alternative Damages v5.xlsx.

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that, in the but-for world, all other X/Xi and S/Si models would have been increased to a use limit of at least 12. As this Table shows, the minimum damages across the class would be roughly \$600-900 million even under this highly conservative assumption.

**Table 11. Damages if the Extended Use Program Would Have Started Earlier and Applied to Other EndoWrist Models in But-For World<sup>943</sup>**

<b>Plaintiff</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
Franciscan Health	\$2,094,011	\$2,085,871	\$1,534,788
Larkin Community Hosp.	\$424,859	\$424,859	\$198,508
Valley Medical Center	\$572,836	\$572,836	\$463,511
Classwide	\$867,544,619	\$863,030,676	\$632,640,089

457. Ultimately, I leave it to the factfinder to resolve factual disputes about whether the use count limits were suppressed.<sup>944</sup> If the factfinder finds that use limits were not suppressed, then I have also provided damages calculated without that effect.<sup>945</sup> In contrast, to the extent that the factfinder finds that there was use limit suppression, Dr. Smith provides no alternative to my but-for use limits of at least 20 uses. Instead, he both (a) mis-defines plaintiffs “prevailing” to mean prevailing against the contractual restrictions, but not against the use limits, and (b) ignores the but-for incentives to raise use limits by simply assuming that but-for use limits would have been the same as current use limits.<sup>946</sup>

#### ***D. Quantification of Damages for da Vinci Service Overcharge***

458. Smith alleges my analysis of da Vinci service damages suffers from “several methodological errors.”<sup>947</sup> I address in the following sections what I understand to be his central criticisms specific to the da Vinci service damages calculation. More

<sup>943</sup> IS63 Alternative Damages v5.xlsx.

<sup>944</sup> Elhaug Report ¶ 403.

<sup>945</sup> Elhaug Report Tables 5, 8, 9 and subsequent corrections and updates.

<sup>946</sup> See Smith (in *In re: da Vinci*) Rough Dep. at 232:21-233:11 (assuming that “plaintiffs will prevail on their claims” means that the contract restrictions will be “no longer enforceable” and that in the but-for world the instruments “are designed the way they are with the instrument counters, exactly the way they are.”)

<sup>947</sup> Smith Report ¶ 239.

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general criticisms, which are unfounded but which Dr. Smith may claim apply to my da Vinci service calculations, are addressed elsewhere in this report.

*1. No Additional Adjustment to My Damage Calculations Is Needed with Respect to Intuitive's Response in the But-for World*

459. Dr. Smith claims that my damages analysis should be adjusted, because even if but-for competition would drive prices down for contestable da Vinci servicing, it might cause Intuitive to raise prices for the da Vinci robot.<sup>948</sup> This argument fails for two reasons. First, as already discussed, Dr. Smith's own data analysis shows that lower prices for da Vinci servicing have coincided with decreases, not increases, in da Vinci robot pricing.<sup>949</sup> Second, from 2018-2021, there were no significant sales of S/Si robots, so that rival entry that lowered S/Si service prices could not possibly been offset by an increase in the prices for S/Si robots.<sup>950</sup>

460. Dr. Smith also claims that my damages analysis should be adjusted because, even if but-for competition would drive prices down for contestable da Vinci servicing, it might cause Intuitive to raise prices for incontestable da Vinci servicing.<sup>951</sup> This argument also fails for several reasons. To begin with, I am unaware of any evidence that Intuitive actually raised the price of incontestable service in response to rival entry offering contestable services in 2019. Dr. Smith is apparently unaware of any such evidence either, given that he does not claim that such evidence exists.

461. Further, as I pointed out in my Initial Report, when Intuitive charged an hourly rate for da Vinci servicing, it was the same rate regardless of the type of service.<sup>952</sup> Dr. Smith responds that hourly rate services were only 1.3% of Intuitive servicing sales.<sup>953</sup> However, the point remains that those hourly rates indicate that, when contestable and incontestable services are not bundled, there are market factors that make their hourly rates the same, so that driving down the price for contestable services should drive down the price for incontestable services. Moreover, as Dr. Smith acknowledges, customers who were not paying hourly rates were enrolled in an annual service plan,<sup>954</sup> and those service plans likewise did not distinguish

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<sup>948</sup> Smith Report ¶ 256.

<sup>949</sup> See *supra* Section VII.B.

<sup>950</sup> See Elhauge Report Figure 3.

<sup>951</sup> Smith Report ¶¶ 257-258.

<sup>952</sup> See Elhauge Report ¶ 222.

<sup>953</sup> Smith Report ¶ 258.

<sup>954</sup> Smith Report ¶ 257.



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between contestable and incontestable services, but rather covered all servicing of a da Vinci robot.

462. Finally, Dr. Smith's critique ignores the fact that the yardstick I used to measure service damages considered overall OEM service revenue, which would necessarily already include the possibility that an OEM might respond to price competition for some services by increasing its prices for other services. I discuss that yardstick in the section that immediately follows.

## *2. Abbott's Profit Margin Provides a Reliable Yardstick for Calculating Damages*

463. Dr. Smith claims that Abbott's profit margin does not provide a reliable yardstick for Intuitive's but-for profit margin.<sup>955</sup> He bases this on the fact that Abbott's service and total revenues are different than Intuitive's, and Abbott's products do not include a MIST surgical robot.<sup>956</sup> Differences between the target business and the yardstick business need to be weighed against the similarities to determine the overall reasonableness. As detailed in my Initial Report, there are several reasons to think Abbott's service business can provide a reasonable yardstick.<sup>957</sup> With respect to any differences in size, there is no other MIST surgical robot manufacturer with service or total revenues similar to Intuitive. Dr. Smith does not dispute my conclusion that Abbott "is also a medical device OEM and is the firm most similar to Intuitive in terms of size within this medical equipment repair and maintenance service industry."<sup>958</sup> Furthermore, Dr. Smith's claim that yardstick analysis cannot apply to Abbott's experience as a medical device maker providing services on its machines conflicts with his own use of pharmaceutical drugs as a yardstick analysis for EndoWrists, which are far more different from each other.<sup>959</sup> Dr. Smith also ignores my point that using Abbot as a yardstick is "likely conservative because the industry average profit margin for other leading firms'

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<sup>955</sup> Smith Report ¶¶ 239, 261, 263.

<sup>956</sup> Smith Report ¶ 263 ("Abbott's total company revenue is nearly 8 times as large as Intuitive's total revenue, while Intuitive's servicing revenue doubles Abbott's servicing revenue" and "Abbott's principal medical devices are for the treatment of cardiovascular diseases, diabetes care products, and neuromodulation devices for the management of chronic pain and movement disorders, while Intuitive's services are limited to its own da Vinci Surgical Systems.").

<sup>957</sup> Elhauge Report ¶¶ 366, 413.

<sup>958</sup> In Smith Report ¶ 263, he quotes that claim from Elhauge Report ¶ 413 and does not dispute it, but rather states "Yet" there are other differences, thus implicitly confirming the similarities that I found.

<sup>959</sup> Smith Report ¶ 244 & n. 622.



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relevant business segments is significantly lower than that of the Abbott yardstick.”<sup>960</sup>

464. Dr. Smith claims my damage calculation is incorrect because it applies a “uniform” discount rate to both contestable and incontestable service revenues.<sup>961</sup> His critique is misplaced not only because, as discussed above, the evidence indicates that Intuitive charged the same hourly rate for both, but also because I relied on an Abbott yardstick for service pricing that is a mix of contestable and incontestable servicing. Such a yardstick would already account for the possibility that contestable service is priced differently than incontestable service in a competitive market. It is therefore entirely appropriate to apply a yardstick based on a mix of contestable and incontestable services to total revenue.

465. Dr. Smith criticizes me for imputing Intuitive’s service EBIT profit margin, suggesting there is no support for why “Intuitive’s EBIT specific to servicing . . . would be proportional to its overall EBIT.”<sup>962</sup> Dr. Smith’s criticism rests on a mistaken premise because I am not arguing or assuming that Intuitive’s *level* of da Vinci servicing EBIT is proportional to its overall EBIT. Rather, I am relying on a premise that the *ratio* of Intuitive’s EBIT profit margin to gross margin is similar across different products. The logic is straightforward: because the accounting method differences between EBIT and gross margins are the same applied to different products, it should produce a similar ratio of EBIT to gross margin for those different products. Furthermore, as explained in my report and not disputed by Dr. Smith, Intuitive has not provided the data that one could use to disprove or update my premise.<sup>963</sup> I also pointed out that this premise is likely conservative, because Intuitive’s contribution margin for da Vinci service was significantly higher than its contribution margins for da Vinci robots or instruments.<sup>964</sup>

466. Dr. Smith makes the additional criticism of my damage calculation that I compare Abbott’s and Intuitive’s service EBIT margin, which he argues “often fails

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<sup>960</sup> Elhauge Report ¶ 413.

<sup>961</sup> Smith Report ¶ 239. *See also id.* ¶ 255 (“Professor Elhauge speculates that Intuitive would reduce its servicing prices due to entry and applies a blanket price discount of 24 percent to all da Vinci servicing revenues.”); *id.* ¶ 257 (criticizing my application of the price discount to all servicing revenues as opposed to a supposedly different analysis, which he does not provide, of contestable and incontestable services).

<sup>962</sup> Smith Report ¶ 266.

<sup>963</sup> Elhauge Report ¶ 366.

<sup>964</sup> Elhauge Report ¶ 366.

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to accurately reflect [a company's] true economic profit margin.”<sup>965</sup> But despite this theoretical criticism, annual reports and other public filings continue to be published and used by analysts to evaluate company performance.<sup>966</sup> Dr. Smith provides no empirical evidence based on said filings that I am using them inappropriately, nor does he provide evidence that they are failing to capture the actual economic outcome of the two firms.<sup>967</sup> The IBISWorld report on which I rely provides an example of a comparison of EBIT profit margins across companies.<sup>968</sup> Furthermore, the fact that I am relying on the ratio of the two firms' EBIT margins means that, if EBIT tends to be above or below the true economic profit margin, that variation should wash out and indicate a similar ratio for the true economic profit margin.

### *3. My Analysis Does Account for Demand for Third-Party da Vinci Service*

467. Dr. Smith states that my damages calculation “provides no analysis of the demand for da Vinci servicing” from IRCs.<sup>969</sup> This is untrue, and the evidence he cites on this point is inapposite, as described below.

468. First, Dr. Smith suggests my calculation is lacking because “only 30 to 35 percent of repairs in the U.S. are done by third-party repair companies.”<sup>970</sup> As an initial matter, this evidence was included in my Initial Report, so there is no further adjustment needed.<sup>971</sup> Further, as discussed below in Section VII.D.4, I conservatively apply the Intuitive but-for price discount of 12% to those customers, instead of the larger discounts of up to 74% that IRCs have offered for da Vinci servicing.<sup>972</sup>

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<sup>965</sup> Smith Report ¶ 262.

<sup>966</sup> See, e.g., Intuitive Surgical Form 10-K FY2021 at 84 (reporting “Income from operations”); Investopedia, Income from Operations, <https://www.investopedia.com/terms/i/ifo.asp> (accessed 2/28/2023) (“Income from operations (IFO) is also known as operating income or EBIT.”); IBISWorld, “Medical Equipment Repair & Maintenance Services,” Industry Report OD4964, December 2021, at 43 (“IBISWorld uses earnings before interest and tax (EBIT) as an indicator of a company's profitability.”).

<sup>967</sup> See also, Smith (in *In re: da Vinci*) Dep. at 115:3 (“Q. Okay. Now, companies take 10-Ks pretty seriously; right? A. I mean, I think they take the accuracy of their 10-Ks seriously, yes.”).

<sup>968</sup> IBISWorld, “Medical Equipment Repair & Maintenance Services,” Industry Report OD4964, December 2021, at 43 (“IBISWorld uses earnings before interest and tax (EBIT) as an indicator of a company's profitability.”); *id.* at 28 (Abbott Laboratories is “considered an All Star because they display stronger...profit...growth compared to their peers.”).

<sup>969</sup> Smith Report ¶ 255.

<sup>970</sup> Smith Report ¶ 255, citing to Clif Parker.

<sup>971</sup> Elhauge Report ¶ 323 & n.765, citing to Clif Parker.

<sup>972</sup> Elhauge Report ¶ 414.

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469. Dr. Smith then claims that “the demand for Restore’s da Vinci System servicing was much smaller relative to the demand for its EndoWrist resets, indicating a lack of demand for third-party da Vinci services.”<sup>973</sup> His claim fails both as a matter of economics and empirics. As a matter of economics, Dr. Smith’s claim fails because Restore’s actual sales volumes in a world with the challenged restraints is not evidence of customer demand in the absence of the challenged restraints. Empirically, Dr. Smith’s claim conflicts with his own cited evidence, which shows that Restore’s da Vinci service revenue was more than twice its EndoWrist revenue.<sup>974</sup> This is hardly evidence that demand for third-party da Vinci service is less than demand for third-party EndoWrist repair.

470. As his final criticism of my alleged failure to account for demand, Dr. Smith claims that there is evidence that Restore’s da Vinci servicing was of “substandard quality.”<sup>975</sup> I already rebutted those claims above in Section VI.C.

*4. Updated Calculations Based on Information Provided Too Late to Be Assessed in My Initial Report and on Three Corrections*

471. Updated Tables 5 to 9 at the end of this section contain updated damage calculations. These are based on (1) updated data that was not provided until after my Initial Report was due, (2) answers that Intuitive provided to data questions only after my Initial Report was due, or on the evening it was due, and (3) a few corrections to my damage calculations. I address each of these in the following paragraphs.

472. Intuitive provided updated service contract data on December 13, 2022. Given that timing, I could not include this data in my Initial December 1, 2022 Report, but do so now.<sup>976</sup> Additional service revenue data of a different format has also now been provided, but I have not yet incorporated it, because Intuitive only answered initial data questions about the newly-produced data, including how it integrates with the previously-produced data, four days before the filing deadline for

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<sup>973</sup> Smith Report ¶ 255.

<sup>974</sup> Expert Report of Loren K. Smith, Ph.D., *Restore Robotics LLC and Restore Robotics Repair LLC v. Intuitive Surgical, Inc.*, Case No. 5:19-cv-55, August 20, 2021, ¶ 27 (Dr. Smith calculates service revenue of \$651,581, consisting of repairs (\$36,581) and preventative maintenance (\$615,000) versus EndoWrist repair revenue of \$235,205).

<sup>975</sup> Smith Report ¶ 255, citing to Smith Report ¶ 203.

<sup>976</sup> Intuitive-02072146 and Intuitive-02072147. This is the basis for Dr. Smith’s criticism that my analysis “does not rely on the correct servicing contracts.” Smith Report ¶ 267.

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this report.<sup>977</sup> This new data includes time-and-materials service revenues, which had been requested several months ago but had previously not been produced. I reserve the right to supplement my analysis and conclusions using the updated information and data.

473. Intuitive provided on December 1, 2022, at 7:57pm, and January 6, 2023 some answers to data questions. Given that timing, my Initial December 1, 2022 Report was not able to incorporate these answers, but I do so now.<sup>978</sup>

474. I also make a few corrections. First, as discussed above, one type of EndoWrist was unintentionally included in my calculations and has now been removed, which has only a trivial effect on estimated damages.<sup>979</sup> Second, minor discrepancies (singles or tens of dollars out of billions) appeared in some of the damages tables and have now been corrected.<sup>980</sup> Third, there was an error in how I imputed Intuitive's da Vinci service EBIT to compare against Abbott's. In my Initial Report, I indicated that my intent was to begin with Intuitive's gross margin, but I instead mistakenly began with its contribution margin.<sup>981</sup> As described in my Initial Report, my method was to multiply the service gross margin by the overall ratio of EBIT margin to gross margin to impute the service EBIT margin.<sup>982</sup> Because Intuitive's service gross margin was 69%, this results in an imputed service EBIT margin of 33% for Intuitive.<sup>983</sup> Based on the formula in my Initial Report, which is not disputed by Dr. Smith,<sup>984</sup> Intuitive's da Vinci's service prices would have needed to be discounted by 12% relative to actual prices in order for Intuitive's margins to match those of Abbott Laboratories' medical equipment repair and maintenance service business,<sup>985</sup> rather than the 24% I calculated in my initial report.<sup>986</sup> The following updated damages tables contain these corrections.

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<sup>977</sup> Intuitive-02072148; Responses to 2023-02-10 Data Questions for Intuitive-.pdf. These responses also indicate Intuitive is producing previously missing service contract revenues in a file "with Bates number Intuitive-02072150."

<sup>978</sup> This is the basis for Dr. Smith's criticism that I do not rely "on the correct...processing instructions as indicated by Intuitive." Smith Report ¶ 267.

<sup>979</sup> See *supra* note 832.

<sup>980</sup> These discrepancies were due to a rounding error.

<sup>981</sup> Elhauge Report ¶ 366. Dr. Smith pointed out the error in Smith Report ¶ 265.

<sup>982</sup> Elhauge Report ¶ 366.

<sup>983</sup> Service gross margin of 69% = (\$916.2 service revenue minus \$287.5 service cost of revenue) / (\$916.2 service revenue). See Intuitive Surgical Form 10-K FY2021 at 84. 69% x 48% = 33%.

<sup>984</sup> See Elhauge Report ¶ 414 n.970.

<sup>985</sup> Percent price decline =  $(1 - .33) / (1 - .24) - 1 = .67 / .76 - 1 = .88 - 1 = -12\%$  or a 12% price drop. Elhauge Report n.970.

<sup>986</sup> See Elhauge Report ¶ 413.

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**Updated Table 5: Damages from Anticompetitively Elevated EndoWrist Prices<sup>987</sup>**

<b>Plaintiff</b>	<b>Platform</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
Franciscan Health	S/Si	\$368,200	\$367,760	\$230,860
Franciscan Health	X/Xi	\$1,596,057	\$1,590,217	\$1,322,677
Franciscan Health	Total	\$1,964,257	\$1,957,977	\$1,553,537
Larkin	S/Si	\$155,790	\$155,790	\$64,260
Larkin	X/Xi	\$157,460	\$157,460	\$77,460
Larkin	Total	\$313,250	\$313,250	\$141,720
Valley Medical	S/Si	\$99,440	\$99,440	\$17,680
Valley Medical	X/Xi	\$439,779	\$439,779	\$439,779
Valley Medical	Total	\$539,219	\$539,219	\$457,459
Classwide	S/Si	\$209,756,417	\$207,712,649	\$121,493,299
Classwide	X/Xi	\$593,743,770	\$592,418,611	\$508,514,919
Classwide	<b>Total</b>	<b>\$803,500,188</b>	<b>\$800,131,261</b>	<b>\$630,008,218</b>

**Updated Table 6: Damages from EndoWrist Use Limit Suppression<sup>988</sup>**

<b>Plaintiff</b>	<b>Platform</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
Franciscan Health	S/Si	\$920,500	\$919,400	\$577,150
Franciscan Health	X/Xi	\$3,518,023	\$3,503,423	\$2,834,573
Franciscan Health	Total	\$4,438,523	\$4,422,823	\$3,411,723
Larkin	S/Si	\$370,350	\$370,350	\$158,400
Larkin	X/Xi	\$393,650	\$393,650	\$193,650
Larkin	Total	\$764,000	\$764,000	\$352,050
Valley Medical	S/Si	\$248,600	\$248,600	\$44,200
Valley Medical	X/Xi	\$978,522	\$978,522	\$978,522
Valley Medical	Total	\$1,227,122	\$1,227,122	\$1,022,722
Classwide	S/Si	\$523,869,138	\$518,763,468	\$303,424,086
Classwide	X/Xi	\$1,303,294,285	\$1,299,985,138	\$1,090,433,128
Classwide	<b>Total</b>	<b>\$1,827,163,424</b>	<b>\$1,818,748,606</b>	<b>\$1,393,857,214</b>

<sup>987</sup> IS28 Damages Estimation v18.<sup>988</sup> IS28 Damages Estimation v18.

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**Updated Table 7: Combined Damages from Anticompetitively Elevated EndoWrist Prices and Use Limit Suppression<sup>989</sup>**

<b>Plaintiff</b>	<b>Platform</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
Franciscan Health	S/Si	\$1,104,600	\$1,103,280	\$692,580
Franciscan Health	X/Xi	\$4,410,476	\$4,392,956	\$3,590,336
Franciscan Health	Total	\$5,515,076	\$5,496,236	\$4,282,916
Larkin	S/Si	\$452,070	\$452,070	\$190,980
Larkin	X/Xi	\$472,380	\$472,380	\$232,380
Larkin	Total	\$924,450	\$924,450	\$423,360
Valley Medical	S/Si	\$298,320	\$298,320	\$53,040
Valley Medical	X/Xi	\$1,222,597	\$1,222,597	\$1,222,597
Valley Medical	Total	\$1,520,917	\$1,520,917	\$1,275,637
Classwide	S/Si	\$628,851,728	\$622,723,424	\$364,232,568
Classwide	X/Xi	\$1,636,379,199	\$1,632,406,722	\$1,380,861,421
Classwide	<b>Total</b>	<b>\$2,265,230,927</b>	<b>\$2,255,130,146</b>	<b>\$1,745,093,989</b>

**Updated Table 8: Overcharges for da Vinci Service<sup>990</sup>**

<b>Plaintiff</b>	<b>Platform</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 1/14/2019</b>
Franciscan Health	Si	\$402,828	\$400,528	\$264,297
Franciscan Health	Xi	\$623,835	\$622,922	\$460,866
Franciscan Health	Total	\$1,026,663	\$1,023,450	\$725,164
Larkin	Si	\$14,980	\$14,980	\$4,553
Larkin	Xi	\$14,980	\$14,980	\$4,553
Larkin	Total	\$29,959	\$29,959	\$9,105
Valley Medical	Si	\$51,107	\$50,617	\$21,588
Valley Medical	Xi	\$64,644	\$64,644	\$64,644
Valley Medical	Total	\$115,751	\$115,261	\$86,232
Classwide	S	\$312,240	\$294,685	\$1,429
Classwide	Si	\$101,851,603	\$101,059,970	\$56,816,442
Classwide	X	\$5,157,179	\$5,157,179	\$5,016,519
Classwide	Xi	\$107,668,979	\$107,461,744	\$88,364,881
<b>Classwide</b>	<b>Total</b>	<b>\$214,990,001</b>	<b>\$213,973,578</b>	<b>\$150,199,271</b>

<sup>989</sup> IS28 Damages Estimation v18.<sup>990</sup> IS52 Overcharges for Service v3.



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**Updated Table 9: Classwide and Named Plaintiff Damages from Inflated EndoWrist Prices, Suppressed EndoWrist Use Limits, and Inflated da Vinci Service Prices<sup>991</sup> (in millions)**

<b>Damages if Started 5/21/2017</b>					
<b>Plaintiff</b>	<b>EW Price Effect</b>	<b>EW Use Effect</b>	<b>EW Price+Use Effect</b>	<b>DV Service</b>	<b>EW Price+Use &amp; DV Service</b>
Franciscan	\$2.0	\$4.4	\$5.5	\$1.0	\$6.5
Larkin	\$0.3	\$0.8	\$0.9	\$0.03	\$1.0
Valley	\$0.5	\$1.2	\$1.5	\$0.1	\$1.6
<b>Classwide</b>	<b>\$803.5</b>	<b>\$1,827.2</b>	<b>\$2,265.2</b>	<b>\$215.0</b>	<b>\$2,480.2</b>

<b>Damages if Started 5/31/2017</b>					
<b>Plaintiff</b>	<b>EW Price Effect</b>	<b>EW Use Effect</b>	<b>EW Price+Use Effect</b>	<b>DV Service</b>	<b>EW Price+Use &amp; DV Service</b>
Franciscan	\$2.0	\$4.4	\$5.5	\$1.0	\$6.5
Larkin	\$0.3	\$0.8	\$0.9	\$0.03	\$1.0
Valley	\$0.5	\$1.2	\$1.5	\$0.1	\$1.6
<b>Classwide</b>	<b>\$800.1</b>	<b>\$1,818.7</b>	<b>\$2,255.1</b>	<b>\$214.0</b>	<b>\$2,469.1</b>

<b>Damages if Started 7/11/2018 for EW and 1/14/2019 for Service</b>					
<b>Plaintiff</b>	<b>EW Price Effect</b>	<b>EW Use Effect</b>	<b>EW Price+Use Effect</b>	<b>DV Service</b>	<b>EW Price+Use &amp; DV Service</b>
Franciscan	\$1.6	\$3.4	\$4.3	\$0.7	\$5.0
Larkin	\$0.1	\$0.4	\$0.4	\$0.01	\$0.4
Valley	\$0.5	\$1.0	\$1.3	\$0.1	\$1.4
<b>Classwide</b>	<b>\$630.0</b>	<b>\$1,393.9</b>	<b>\$1,745.1</b>	<b>\$150.2</b>	<b>\$1,895.3</b>

475. As these updated tables indicate, the data updates and corrections have little effect on damages related to EndoWrist price elevation or use suppression. The effect on da Vinci service pricing is more significant because I have corrected the but-for service discount from 24% to 12%, but damages on da Vinci servicing prices remain very high, in the range of \$150 million to \$215 million to all buyers in the market. Combined damages from the economic harm in both the EndoWrist and da

<sup>991</sup> *Supra* Updated Tables 5-8.

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Vinci servicing market likewise remain high, in the range of \$1.9 to \$2.5 billion, roughly 90% of what I calculated in my Initial Report.<sup>992</sup>

476. The continuing economic harm from continuing to exclude rival competition also continues to be high. I conservatively calculate that in 2021 (the last full year of data), total damages from the anticompetitive restraints were \$516.4 million (\$55.6 million from da Vinci servicing and \$460.8 million for EndoWrists) to the proposed class and a total of \$1.7 million for the three named plaintiffs (\$0.3 million from da Vinci servicing and \$1.4 million for EndoWrists).<sup>993</sup> Assuming Intuitive's volume of sales remains the same or higher, this implies that as long as the anticompetitive restraints continue, the proposed class will continue to suffer at least \$516 million in harm annually and the three named plaintiffs will continue to suffer a total of at least \$1.7 million in harm annually.<sup>994</sup>

477. My methodology can also easily recalculate either past damages or prospective harm based on any alternative conclusion the factfinder might make about the but-for rival entry date, the EndoWrist price effect, the size of the EndoWrist use limit suppression, the amount of service overcharge, and the EndoWrist or robot models that would be affected by any of those effects.

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<sup>992</sup> Elhauge Report Corrected Table 9.

<sup>993</sup> IS51 Total Damages v9.

<sup>994</sup> While this conservatively assumes no growth in market size, it would also be possible to perform this calculation using projected growth rates. *See, e.g.,* Intuitive-00701321.

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#### **APPENDIX A: MATERIALS RELIED UPON**

- All documents, depositions, academic literature, web materials, and other sources cited in the main body and footnotes.
- The following sources for data and figures:

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*In re: Da Vinci Surgical Robot Antitrust Litigation* - Intuitive's Responses to Plaintiffs' Follow-Up Data Questions on Intuitive's Initial Responses dated Nov. 15, 2022 (Intuitive's Responses to Plaintiffs' Follow-Up Data Questions.pdf), 12/1/2022.

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**EXHIBIT A**

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Founding Director, Petrie-Flom Center for Health Law Policy, Biotechnology and Bioethics.

Member, ABA Antitrust Section Transition Task Force 2012.

Chair, Obama Campaign's Antitrust Advisory Committee

Co-Chair, Obama Campaign's Blogs and Op-eds Committee

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Member, Editorial Board for Competition Policy International

Member, Advisory Board for the Journal of Competition Law & Economics.

Member, Advisory Board for the Social Sciences Research Network on Antitrust Law & Policy.

Member, Advisory Board for the Social Sciences Research Network on Telecommunications &  
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Recipient, 2010 Jerry S. Cohen Memorial Fund Writing Award, for "Tying, Bundled Discounts,  
and the Death of the Single Monopoly Profit Theory"

Recipient, Best Academic Anticompetitive Practice Article - 2015 Antitrust Writing Awards, for  
"Robust Exclusion and Market Division Through Loyalty Discounts"

Recipient, 2016, Award for being one of the top 10 corporate and securities articles of the year,

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for “Horizontal Shareholding”

Recipient, 2017 Jerry S. Cohen Memorial Fund Writing Award, for “Horizontal Shareholding”

Recipient, 2017, Society of Investment Law Prize for best investment law scholarship, for

“Horizontal Shareholding”

Recipient, 2022 Jerry S. Cohen Memorial Fund Writing Award, for Best Antitrust Article on

Common Ownership for “The Causal Mechanisms of Horizontal Shareholding”

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Harvard Committees

Chair, Harvard Law School Lateral Appointments Committee (1998-99), Member (2003-05, 2011-2014).

Member, Harvard Law School Entry Level Appointments Committee (2009-2011).

Member, Harvard University Standing Committee on the Degree of Doctor of Philosophy in Health Policy (1996-99, 2006-07).

Member, Harvard University Internal Advisory Board for the Interfaculty Initiative in Health Policy (1996-99).

Member, Harvard Law School Lecturers and Visitors Committee (1996-98).

**Past Academic Positions**

1988-95	Professor of Law, Boalt Hall, University of California at Berkeley
1995	Visiting Professor of Law, Univ. of Chicago Law School
1994	Visiting Professor of Law, Harvard Law School
1993	Visiting Olin Faculty Fellow, Yale Law School

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1991-92 Visiting Scholar in Europe at the Karolinska Institute, the Centre for Health Economics, the Rockefeller Foundation Study Center, Cambridge University, the European University Institute and the University of Florence

**Clerkships**

1987-88 Clerk for Justice William J. Brennan, Jr., United States Supreme Court

1986-87 Clerk for Judge William A. Norris, U.S. Court of Appeals for the Ninth Circuit

1986 Clerk for U.S. Solicitor General's Office, Washington, D.C.

**Bar Admissions:** Massachusetts (2000); Pennsylvania (1986); United States Courts of Appeals for the Fourth (1997), Sixth (2008), and Ninth Circuits (1987); Supreme Court of the United States (1997).

**ECONOMICS EXPERT WORK**

President, Legal Economics LLC, 2007 to present.

Senior Expert at Criterion Economics LLC, 2004-2007

Recipient in 2016 and 2020 of AAI award for Outstanding Antitrust Litigation Achievement in Economics.

Named One of World's Leading Competition Economists in the *International Who's Who of Competition Lawyers and Economists*.

Testifying Expert in *In Re Da Vinci Surgical Robot Antitrust Litigation*, a case alleging exclusionary restraints related to robot surgery devices.

Testifying Expert in *State of Illinois, ex rel. Edelweiss Fund, LLC v. J.P. Morgan Chase & Co.*, a case alleging that certain financial institutions falsely represented they were individually marketing VRDOs.



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Testifying Expert in *Moehrl v. Nat'l Ass'n of Realtors*, a case alleging that Realtor associations have agreements that restrain the market for real estate broker services.

Testifying Expert in *Markson v. CRST Int'l*, a case alleging an agreement not to poach truck drivers from rival trucking companies.

Testifying Expert in *In re Broiler Chicken Antitrust Litigation*, a case alleging that producers of broiler chickens engaged in conspiracies to share information, restrict output, and manipulate or fix prices.

Testifying Expert in *Cameron v. Apple*, a class action by app developers alleging that Apple has anticompetitively excluded competition for app distribution.

Testifying Expert in *In Re Novartis And Par Antitrust Litigation*, a case alleging an reverse payment patent settlement delayed generic competition with the branded pharmaceutical Exforge.

Testifying Expert in *In Re EpiPen Marketing Sales Practices and Antitrust Litigation*, a case alleging anticompetitive reverse payments and foreclosing agreements.

Testifying Expert in *Roxul USA, Inc. v. Armstrong World Industries, Inc.*, a case alleging exclusive dealing agreements in the market for suspended acoustical ceiling tiles.

Testifying Expert in *Sitts v. Dairy Farmers of America, Inc.*, a case alleging a conspiracy to suppress raw milk prices.

Testifying Expert in *In Re Qualcomm Antitrust Litigation*, a case alleging tying and exclusive dealing involving modem chipsets and cellular standard essential patents.

Testifying Expert in *In Re Niaspan Antitrust Litigation*, a case alleging a reverse payment patent settlement.

Testifying Expert in *In Re Lamictal Direct Purchaser Antitrust Litigation*, a case alleging a reverse payment patent settlement.

Testifying Expert in *In re Namenda Antitrust Litigation*, a case alleging a reverse payment patent settlement and product hop.

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Testifying Expert in *In re Lidoderm Antitrust Litigation*, a case alleging a reverse payment patent settlement.

Testifying Expert in *Valassis Communications v. News Corp*, a case alleging anticompetitive bundling and other exclusionary conduct.

Testifying Expert in *GN Netcom v. Plantronics*, a case alleging exclusive dealing in the distribution of contact center and office headsets.

Testifying Expert in *Louisiana Wholesale Drug v. Unimed Pharmaceuticals (Androgel case)*, a case alleging a reverse payment patent settlement.

Testifying Expert in *Garber v. Office of the Commissioner of Baseball*, a case alleging horizontal territorial restraints on broadcasting baseball games.

Testifying Expert in *Suture Express v. Cardinal Health*, a case alleging tying and bundled loyalty contracts in medical distribution.

Testifying Expert in *Savant v. Crestron*, a case alleging exclusive dealing in the high-end home control system market

Testifying Expert in *Castro et. al. vs Sanofi Pasteur*, a case alleging anticompetitive bundled loyalty contracts in the vaccines industry.

Testifying Expert in *In re Mushroom Direct Purchaser Antitrust Litigation*, a case alleging price-fixing in the fresh mushroom market.

Testifying Expert in *It's My Party, Inc. v. Live Nation, Inc.*, a case alleging anticompetitive conduct in markets for promotion and amphitheaters.

Testifying Expert in *Retractable Technologies v. Becton Dickinson*, a case alleging exclusionary contracts in syringe and IV catheter markets.

Testifying Expert in *Caldon v. Westinghouse Electric*, a case alleging attempted monopolization.

Testifying Expert in *King Drug v. Cephalon*, a case alleging that a reverse payment settlement of a patent dispute delayed entry and restrained competition in a pharmaceutical market.

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Testifying Expert for the United States in *United States v. Wyeth*, a case involving claims of bundled sales and bundled discounts in a pharmaceutical market, which resulted in a \$784 million settlement for the United States.

Testifying Expert in *BAE Holdings AH v. ArmorWorks Enterprises*, a case alleging price discrimination by a ceramic tile manufacturer resulting in harm to downstream competition.

Testifying Expert in *In re Marsh & McLennan Companies, Inc. Securities Litigation*, a case alleging securities violations from failure to disclose bid steering.

Testifying Expert in *Tessera Technologies v. Hynix Semiconductor*, a case alleging conspiracy to exclude outside technologies from semiconductor markets.

Testifying Expert in *American Steel Erectors v. Local Union No. 7*, a case alleging boycott claims related to steel erection and labor markets.

Testifying Expert in *BP America v. Repsol*, an arbitration.

Testifying Expert in *Food Lion v. Dean Foods Company*, a class action alleging conspiracies to restrict and foreclose competition in milk markets.

Testifying Expert in *Eisai Inc. v. Sanofi-Aventis U.S. LLC*, a case by a rival alleging foreclosure in anticoagulant pharmaceutical markets.

Testifying Expert in *Daniels v. Tyco*, a case by a rival alleging foreclosure from sharps containers and GPO markets.

Testifying Expert in *Natchitoches Parish Hospital v. Tyco*, a class action concerning medical sharps containers and GPO markets.

Testifying Expert in *Amgen v. F. Hoffman La Roche*, concerning erythropoietin-simulating agents (ESAs) and white blood cell simulators (WBCs) pharmaceutical markets.

Testifying Expert in *White v. NCAA*, concerning markets for athletic and educational services.

Testifying Expert in *Applied Medical Resources v. Ethicon, Inc.*, concerning sutures, trocars, and GPO markets.

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Testifying Expert in *Masimo Corp. v. Tyco Health Care Group*, concerning oximetry products and GPO markets.

Testifying Expert in *Rochester Medical v. Bard*, concerning catheter and GPO markets.

Testifying Expert in *Retractable Technologies, Inc. v. Becton Dickinson*, concerning syringes and GPO markets.

Testifying Expert in *Spartanburg v. Hill-Rom*, a class action concerning hospital beds and GPO markets.

Testifying Expert in *Mountain Area Realty v. Wintergreen Partners*, concerning conduct in the real estate brokerage services market.

Testifying Expert in *Louisiana Municipal Police Employees' Retirement System v. Crawford*, concerning merger in the pharmacy benefit manager market.

Testifying Expert in *Capital Credit Alliance v. National Automated Clearing House Association*, concerning electronic checks market.

Testifying Expert for Intel before EC and Korean antitrust authorities on microprocessor markets.

Testifying Expert for AmBev before the EC and Brazilian antitrust authorities on beer market.

Testifying Expert for 1-800-Contacts before the FTC on OSI-CooperVision merger and agreements restraining distribution by nonprescribing retailers.

Testifying Expert in *In Re Cardizem CD Antitrust Litigation*, concerning patents and pharmaceuticals.

Testifying Expert regarding the *B.F. Goodrich-Coltec* Merger, concerning the aerospace industry.

Testifying Expert regarding the *Alcoa-Reynolds* Merger, concerning the aluminum industry

Expert Consultant to National Cable Television Association on Internet Access Bills before Congress and Interactive Television Inquiry before FCC.

Expert for Royal Caribbean for proposed mergers of Princess with Royal Caribbean and Carnival, concerning the cruise industry.

Expert for the Medical Device Manufacturers Association, producing Report to U.S. Senate and

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Statement to FTC/DOJ regarding exclusionary agreements between medical device suppliers and Group Purchasing Organizations and their hospitals.

**EDUCATION**

**Harvard Law School**

J.D., June 1986

*Awards*

Fay Diploma -- for graduating first in class

Sears Prize -- Second Year -- to top two students in class

Sears Prize -- First Year -- to top two students in class

*Activities*

Harvard Law Review, Articles Office Co-Chair

Class Marshal

Author: *Modes of Analysis: The Theories and Justifications of Privileged Communications*,  
98 HARV. L. REV. 1471-1500 (1985).

**Harvard College**

B.A., June 1982

Graduated in three years, majoring in Biochemical Sciences. GPA 3.9

**PERSONAL**

Born of Argentinian immigrants in New York City. First language was Spanish. Live with wife and 3 children in Newton, Massachusetts.

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## **EXHIBIT B**

### **EINER ELHAUGE STATEMENT OF PUBLICATIONS, PRIOR TRIAL AND DEPOSITION EXPERT TESTIMONY, AND COMPENSATION**

#### **I. Publications**

My publications from the last 10 years are listed on my CV, which is attached as Exhibit A.

#### **II. Trial and Deposition Expert Testimony**

Within the past four years, I have provided deposition testimony as an expert in *In Re EpiPen (Epinephrine Injection, USP) Marketing Sales Practices and Antitrust Litigation* on December 15, 2019; in *Cameron v. Apple* on July 30, 2021; *In Re Novartis and Par Antitrust Litigation* on December 20, 2021; *In Re Broiler Chicken Antitrust Litigation* on February 15, 2022, and August 26, 2022; *Moehrl v. Nat'l Ass'n of Realtors* on May 18-19, 2022; and *Markson v. CRST International, Inc.* on June 8, 2022.

Within the past four years, I have also testified as an expert at a class certification hearing in *In Re EpiPen (Epinephrine Injection, USP) Marketing Sales Practices and Antitrust Litigation* on June 11, 2019.

#### **III. Compensation**

I am being compensated at a rate of \$1350 per hour for my work on this case, and my consulting firm, Legal Economics LLC, is being compensated \$235-745 per hour for the work of my staff on this report.



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**UPDATED EXHIBIT C****Damages From Anticompetitively Elevated EndoWrist Prices  
by Model and Named Plaintiff<sup>995</sup>**

<b>Plaintiff</b>	<b>Material Number and Description</b>	<b>System</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
Franciscan Health	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$34,760	\$34,760	\$18,040
Larkin Community Hospital	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$19,360	\$19,360	\$7,040
Valley Medical Center	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$11,000	\$11,000	\$1,760
Franciscan Health	420033 ASSEMBLY,BLACK DIAMOND MICRO FORCEPS,8MM	S/Si	\$0	\$0	\$0
Franciscan Health	420048 ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Valley Medical Center	420048 ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420049 ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	S/Si	\$18,800	\$18,800	\$13,200
Valley Medical Center	420049 ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$41,360	\$40,920	\$27,280
Larkin Community Hospital	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$29,920	\$29,920	\$14,960
Valley Medical Center	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$12,760	\$12,760	\$2,640
Franciscan Health	420110 ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	S/Si	\$16,740	\$16,740	\$7,560
Valley Medical Center	420110 ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	S/Si	\$0	\$0	\$0
Franciscan Health	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$0	\$0	\$0
Larkin Community Hospital	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$7,650	\$7,650	\$900
Valley Medical Center	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$0	\$0	\$0
Franciscan Health	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$14,580	\$14,580	\$11,880
Larkin Community Hospital	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$4,320	\$4,320	\$0
Valley Medical Center	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$4,320	\$4,320	\$0
Franciscan Health	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$106,240	\$106,240	\$65,280
Larkin Community Hospital	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$46,080	\$46,080	\$21,760
Valley Medical Center	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$38,400	\$38,400	\$8,960
Franciscan Health	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$10,000	\$10,000	\$7,600
Larkin Community Hospital	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$2,000	\$2,000	\$0
Valley Medical Center	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$0	\$0	\$0
Franciscan Health	420184 ASSEMBLY,PERMANENT CAUTERY SPATULA,8MM,I	S/Si	\$0	\$0	\$0
Franciscan Health	420189 ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	S/Si	\$4,000	\$4,000	\$3,200
Larkin Community Hospital	420189 ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	S/Si	\$400	\$400	\$0
Franciscan Health	420190 ASSEMBLY,COBRA GRASPER,8MM,IS2000	S/Si	\$3,960	\$3,960	\$3,960
Franciscan Health	420194 ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	S/Si	\$16,720	\$16,720	\$9,680
Valley Medical Center	420194 ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420203 ASSEMBLY,PERICARDIAL DISSECTOR,8MM,IS200	S/Si	\$0	\$0	\$0
Franciscan Health	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$43,200	\$43,200	\$27,540
Larkin Community Hospital	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$23,220	\$23,220	\$10,800
Valley Medical Center	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$28,620	\$28,620	\$4,320
Franciscan Health	420207 ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	-\$440	-\$440	\$440
Larkin Community Hospital	420207 ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	\$19,360	\$19,360	\$8,800
Valley Medical Center	420207 ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	\$880	\$880	\$0

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Franciscan Health	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$15,080	\$15,080	\$9,280
Larkin Community Hospital	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$3,480	\$3,480	\$0
Valley Medical Center	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$580	\$580	\$0
Franciscan Health	420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Valley Medical Center	420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420278	ASSEMBLY,GRASPING RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	S/Si	\$43,200	\$43,200	\$25,920
Valley Medical Center	420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	S/Si	\$2,880	\$2,880	\$0
Franciscan Health	420318	ASSEMBLY,SMALL GRASPING RETRACTOR,8MM,IS	S/Si	\$0	\$0	\$0
Franciscan Health	420344	ASSEMBLY,CURVED BIPOLAR DISSECTOR,8MM,IS	S/Si	\$0	\$0	\$0
Franciscan Health	470001	8MM,POTTS SCISSORS,IS4000	X/Xi	\$1,560	\$1,560	\$1,560
Franciscan Health	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$68,530	\$68,090	\$49,610
Larkin Community Hospital	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$17,160	\$17,160	\$8,360
Valley Medical Center	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$15,840	\$15,840	\$15,840
Franciscan Health	470007	8MM,ROUND TIP SCISSORS,IS4000	X/Xi	\$2,400	\$2,400	\$2,400
Franciscan Health	470048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$5,600	\$5,600	\$2,800
Franciscan Health	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$59,220	\$59,220	\$44,940
Larkin Community Hospital	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$1,260	\$1,260	\$840
Valley Medical Center	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$14,280	\$14,280	\$14,280
Franciscan Health	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$87,120	\$87,120	\$67,320
Larkin Community Hospital	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$26,840	\$26,840	\$13,640
Valley Medical Center	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$18,920	\$18,920	\$18,920
Franciscan Health	470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$75,600	\$73,980	\$56,700
Valley Medical Center	470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$5,400	\$5,400	\$5,400
Franciscan Health	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$433,920	\$432,640	\$370,560
Larkin Community Hospital	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$44,800	\$44,800	\$21,760
Valley Medical Center	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$152,960	\$152,960	\$152,960
Franciscan Health	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$55,280	\$55,280	\$45,680
Larkin Community Hospital	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$1,200	\$1,200	\$800
Valley Medical Center	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$3,520	\$3,520	\$3,520
Franciscan Health	470184	8MM,PERMANENT CAUTERY SPATULA,IS4000	X/Xi	\$44,640	\$44,640	\$33,040
Franciscan Health	470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$14,960	\$14,960	\$10,120
Larkin Community Hospital	470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$440	\$440	\$0
Franciscan Health	470194	8MM,MEGA NEEDLE DRIVER,IS4000	X/Xi	\$75,680	\$74,800	\$61,600
Franciscan Health	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$132,840	\$131,220	\$89,640
Larkin Community Hospital	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$34,560	\$34,560	\$17,820
Valley Medical Center	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$58,320	\$58,320	\$58,320
Franciscan Health	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$5,720	\$5,720	\$4,840
Larkin Community Hospital	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$5,280	\$5,280	\$1,760
Valley Medical Center	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$4,840	\$4,840	\$4,840
Valley Medical Center	470249	8MM,DUAL BLADE RETRACTOR,IS4000	X/Xi	\$7,000	\$7,000	\$7,000
Franciscan Health	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$12,480	\$12,480	\$11,040
Larkin Community Hospital	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$25,920	\$25,920	\$12,480
Valley Medical Center	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$48,480	\$48,480	\$48,480
Franciscan Health	470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$150,480	\$150,480	\$105,840
Valley Medical Center	470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$17,280	\$17,280	\$17,280

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Franciscan Health	470318	8MM,SMALL GRASPING RETRACTOR,IS4000	X/Xi	\$17,280	\$17,280	\$14,400
Franciscan Health	470344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$9,720	\$9,720	\$7,560
Franciscan Health	471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$43,860	\$43,860	\$43,860
Valley Medical Center	471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$9,690	\$9,690	\$9,690
Franciscan Health	471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$39,960	\$39,960	\$39,960
Valley Medical Center	471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$7,560	\$7,560	\$7,560
Franciscan Health	471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$50,220	\$50,220	\$50,220
Valley Medical Center	471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$10,260	\$10,260	\$10,260
Franciscan Health	471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$54,614	\$54,614	\$54,614
Valley Medical Center	471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$1,974	\$1,974	\$1,974
Franciscan Health	471190	8MM,COBRA GRASPER,IS4000	X/Xi	\$7,776	\$7,776	\$7,776
Franciscan Health	471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$64,400	\$64,400	\$64,400
Valley Medical Center	471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$32,480	\$32,480	\$32,480
Franciscan Health	471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$5,610	\$5,610	\$5,610
Valley Medical Center	471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$17,850	\$17,850	\$17,850
Franciscan Health	471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$75,075	\$75,075	\$75,075
Valley Medical Center	471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$13,125	\$13,125	\$13,125
Franciscan Health	471344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$1,512	\$1,512	\$1,512
Franciscan Health	TOTAL		S/Si	\$368,200	\$367,760	\$230,860
Franciscan Health	TOTAL		X/Xi	\$1,596,057	\$1,590,217	\$1,322,677
Larkin Community Hospital	TOTAL		S/Si	\$155,790	\$155,790	\$64,260
Larkin Community Hospital	TOTAL		X/Xi	\$157,460	\$157,460	\$77,460
Valley Medical Center	TOTAL		S/Si	\$99,440	\$99,440	\$17,680
Valley Medical Center	TOTAL		X/Xi	\$439,779	\$439,779	\$439,779

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**UPDATED EXHIBIT D****Damages From Anticompetitively Elevated EndoWrist Prices  
by Model for the Proposed Class<sup>996</sup>**

Material Number and Description	System	Damages if Started 5/21/2017	Damages if Started 5/31/2017	Damages if Started 7/11/2018
420001	ASSEMBLY,POTTS SCISSORS,8MM,IS2000	\$499,115	\$494,825	\$286,022
420006	ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	\$24,269,114	\$24,028,654	\$13,757,917
420007	ASSEMBLY,ROUND TIP SCISSORS,8MM,IS2000	\$435,266	\$429,806	\$223,126
420033	ASSEMBLY,BLACK DIAMOND MICRO FORCEPS,8MM	\$270,231	\$267,231	\$157,995
420036	ASSEMBLY,DEBAKEY FORCEPS,8MM,IS2000	\$204,028	\$197,738	\$97,144
420048	ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	\$1,021,763	\$1,001,673	\$505,810
420049	ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	\$7,116,488	\$7,034,188	\$4,003,756
420093	ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	\$22,920,717	\$22,712,597	\$13,512,736
420110	ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	\$1,202,484	\$1,187,364	\$650,660
420121	ASSEMBLY,FINE TISSUE FORCEPS,8MM,IS2000	\$22,374	\$22,374	\$12,294
420157	ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	\$57,600	\$57,600	\$36,900
420171	ASSEMBLY,MICRO BIPOLAR FORCEPS,8MM,IS200	\$260,285	\$259,205	\$152,313
420172	ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	\$12,236,341	\$12,114,841	\$6,716,534
420178	8MM,CURVED SCISSORS,IS2000	\$83,600	\$83,600	\$83,600
420179	ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	\$60,646,059	\$60,055,339	\$35,772,293
420181	ASSEMBLY,RESANO FORCEPS,8MM,IS2000	\$74,306	\$72,546	\$32,076
420183	ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	\$4,724,544	\$4,676,144	\$2,684,688
420184	ASSEMBLY,PERMANENT CAUTERY SPATULA,8MM,I	\$1,723,470	\$1,704,670	\$939,512
420189	ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	\$1,328,384	\$1,315,984	\$653,826
420190	ASSEMBLY,COBRA GRASPER,8MM,IS2000	\$781,912	\$781,912	\$781,912
420192	ASSEMBLY,VALVE HOOK,8MM,IS2000	\$9,720	\$9,720	\$3,240
420194	ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	\$10,094,703	\$9,985,583	\$5,771,189
420203	ASSEMBLY,PERICARDIAL DISSECTOR,8MM,IS200	\$10,979	\$10,979	\$6,579
420204	ASSEMBLY,ATRIAL RETRACTOR,8MM,IS2000	\$62,479	\$60,709	\$23,450
420205	ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	\$28,079,777	\$27,822,769	\$16,595,055
420207	ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	\$1,596,494	\$1,580,654	\$940,345
420215	ASSEMBLY,CARDIAC PROBE GRASPER,8MM,IS200	\$22,330	\$22,330	\$10,890
420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	\$10,394,480	\$10,288,920	\$5,483,064
420246	ASSEMBLY,ATRIAL RETRACTOR SHORT RIGHT,8M	\$112,974	\$111,794	\$66,074
420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	\$92,807	\$91,627	\$44,427
420278	ASSEMBLY,GRASPING RETRACTOR,8MM,IS2000	\$515,562	\$507,882	\$238,297
420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	\$17,675,047	\$17,517,607	\$10,684,444
420318	ASSEMBLY,SMALL GRASPING RETRACTOR,8MM,IS	\$728,977	\$726,097	\$343,673
420344	ASSEMBLY,CURVED BIPOLAR DISSECTOR,8MM,IS	\$482,009	\$477,689	\$221,457
470001	8MM,POTTS SCISSORS,IS4000	\$1,924,230	\$1,919,160	\$1,587,438
470006	8MM,LARGE NEEDLE DRIVER,IS4000	\$37,902,794	\$37,743,832	\$28,394,372
470007	8MM,ROUND TIP SCISSORS,IS4000	\$1,256,516	\$1,256,109	\$1,078,143

<sup>996</sup> IS28 Damages Estimation v18.

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470033	8MM,BLACK DIAMOND MICRO FORCEPS,IS4000	X/Xi	\$951,406	\$948,406	\$782,630
470036	8MM,DEBAKEY FORCEPS,IS4000	X/Xi	\$691,463	\$690,263	\$545,501
470048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$1,650,294	\$1,641,894	\$1,187,118
470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$21,170,862	\$21,106,706	\$16,605,418
470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$37,290,691	\$37,173,651	\$28,806,017
470171	8MM,MICRO BIPOLAR FORCEPS,IS4000	X/Xi	\$535,381	\$531,901	\$403,101
470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$23,013,612	\$22,916,952	\$16,952,411
470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$173,239,567	\$172,903,395	\$151,660,547
470181	8MM,RESANO FORCEPS,IS4000	X/Xi	\$229,480	\$229,480	\$193,828
470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$17,310,882	\$17,277,266	\$14,723,162
470184	8MM,PERMANENT CAUTERY SPATULA,IS4000	X/Xi	\$4,488,961	\$4,474,145	\$3,554,865
470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$1,946,113	\$1,938,177	\$1,454,191
470194	8MM,MEGA NEEDLE DRIVER,IS4000	X/Xi	\$20,116,614	\$20,069,074	\$17,362,440
470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$58,820,191	\$58,587,991	\$44,306,410
470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$5,021,876	\$5,006,892	\$4,289,398
470215	8MM,CARDIAC PROBE GRASPER,IS4000	X/Xi	\$260,197	\$259,717	\$223,717
470246	8MM,ATRIAL RETRACTOR SHORT RIGHT,IS4000	X/Xi	\$544,940	\$544,940	\$445,344
470249	8MM,DUAL BLADE RETRACTOR,IS4000	X/Xi	\$788,400	\$783,240	\$651,892
470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$8,517,943	\$8,493,463	\$6,817,723
470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$34,232,389	\$34,134,469	\$27,210,185
470318	8MM,SMALL GRASPING RETRACTOR,IS4000	X/Xi	\$8,326,208	\$8,297,408	\$6,758,988
470344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$2,986,374	\$2,963,694	\$1,993,694
471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$19,516,044	\$19,516,044	\$19,516,044
471048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$576,018	\$576,018	\$576,018
471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$14,375,494	\$14,375,494	\$14,375,494
471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$21,206,657	\$21,206,657	\$21,206,657
471171	8MM,MICRO BIPOLAR FORCEPS,IS4000	X/Xi	\$350,189	\$350,189	\$350,189
471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$13,472,964	\$13,472,964	\$13,472,964
471190	8MM,COBRA GRASPER,IS4000	X/Xi	\$1,494,372	\$1,494,372	\$1,494,372
471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$30,667,547	\$30,667,547	\$30,667,547
471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$5,351,432	\$5,351,432	\$5,351,432
471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$21,920,359	\$21,920,359	\$21,920,359
471344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$1,595,310	\$1,595,310	\$1,595,310
TOTAL		S/Si	\$209,756,417	\$207,712,649	\$121,493,299
TOTAL		X/Xi	\$593,743,770	\$592,418,611	\$508,514,919



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**UPDATED EXHIBIT E****Suppression of Use Limit Relative to the But-for World<sup>997</sup>**

Material Number and Description		Use Limit		Suppression
		Actual	But-for	Percent
		(1)	(2)	(3)=[(2)-(1)]/(2)
420001	ASSEMBLY,POTTS SCISSORS,8MM,IS2000	10	20	50%
420006	ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	10	20	50%
420007	ASSEMBLY,ROUND TIP SCISSORS,8MM,IS2000	10	20	50%
420033	ASSEMBLY,BLACK DIAMOND MICRO FORCEPS,8MM	15	20	25%
420036	ASSEMBLY,DEBAKEY FORCEPS,8MM,IS2000	10	20	50%
420048	ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	10	20	50%
420049	ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	10	20	50%
420093	8MM,PROGRASP FORCEPS,IS2000	10	20	50%
420110	ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	10	20	50%
420121	ASSEMBLY,FINE TISSUE FORCEPS,8MM,IS2000	15	20	25%
420157	ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	30	30	0%
420171	ASSEMBLY,MICRO BIPOLAR FORCEPS,8MM,IS200	10	20	50%
420172	ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	10	20	50%
420178	8MM,CURVED SCISSORS,IS2000	10	20	50%
420179	8MM,MONOPOLAR CURVED SCISSORS,IS2000	10	20	50%
420181	ASSEMBLY,RESANO FORCEPS,8MM,IS2000	10	20	50%
420183	8MM,PERMANENT CAUTERY HOOK,IS2000	10	20	50%
420184	ASSEMBLY,PERMANENT CAUTERY SPATULA,8MM,I	10	20	50%
420189	ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	10	20	50%
420190	8MM,COBRA GRASPER,IS2000	10	20	50%
420192	ASSEMBLY,VALVE HOOK,8MM,IS2000	15	20	25%
420194	8MM,MEGA NEEDLE DRIVER,IS2000	10	20	50%
420203	ASSEMBLY,PERICARDIAL DISSECTOR,8MM,IS200	10	20	50%
420204	ASSEMBLY,ATRIAL RETRACTOR,8MM,IS2000	10	20	50%
420205	ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	10	20	50%
420207	8MM,TENACULUM FORCEPS,IS2000	10	20	50%
420215	ASSEMBLY,CARDIAC PROBE GRASPER,8MM,IS200	10	20	50%
420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	10	20	50%
420246	ASSEMBLY,ATRIAL RETRACTOR SHORT RIGHT,8M	10	20	50%
420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	10	20	50%
420278	ASSEMBLY,GRASPING RETRACTOR,8MM,IS2000	10	20	50%
420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	10	20	50%
420318	ASSEMBLY,SMALL GRASPING RETRACTOR,8MM,IS	10	20	50%
420344	ASSEMBLY,CURVED BIPOLAR DISSECTOR,8MM,IS	10	20	50%
470001	8MM,POTTS SCISSORS,IS4000	10	20	50%
470006	8MM,LARGE NEEDLE DRIVER,IS4000	10	20	50%
470007	8MM,ROUND TIP SCISSORS,IS4000	10	20	50%
470033	8MM,BLACK DIAMOND MICRO FORCEPS,IS4000	15	20	25%
470036	8MM,DEBAKEY FORCEPS,IS4000	10	20	50%
470048	8MM,LONG TIP FORCEPS,IS4000	10	20	50%
470049	8MM,CADIERE FORCEPS,IS4000	10	20	50%
470093	8MM,PROGRASP FORCEPS,IS4000	10	20	50%

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470171	8MM,MICRO BIPOLAR FORCEPS,IS4000	10	20	50%
470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	10	20	50%
470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	10	20	50%
470181	8MM,RESANO FORCEPS,IS4000	10	20	50%
470183	8MM,PERMANENT CAUTERY HOOK,IS4000	10	20	50%
470184	8MM,PERMANENT CAUTERY SPATULA,IS4000	10	20	50%
470190	8MM,COBRA GRASPER,IS4000	10	20	50%
470194	8MM,MEGA NEEDLE DRIVER,IS4000	10	20	50%
470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	10	20	50%
470207	8MM,TENACULUM FORCEPS,IS4000	10	20	50%
470215	8MM,CARDIAC PROBE GRASPER,IS4000	10	20	50%
470246	8MM,ATRIAL RETRACTOR SHORT RIGHT,IS4000	10	20	50%
470249	8MM,DUAL BLADE RETRACTOR,IS4000	10	20	50%
470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	10	20	50%
470309	8MM,MEGA SUTURECUT ND,IS4000	10	20	50%
470318	8MM,SMALL GRASPING RETRACTOR,IS4000	10	20	50%
470344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	10	20	50%
471006	8MM,LARGE NEEDLE DRIVER,IS4000	15	20	25%
471048	8MM,LONG TIP FORCEPS,IS4000	18	20	10%
471049	8MM,CADIERE FORCEPS,IS4000	18	20	10%
471093	8MM,PROGRASP FORCEPS,IS4000	18	20	10%
471171	8MM,MICRO BIPOLAR FORCEPS,IS4000	14	20	30%
471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	14	20	30%
471190	8MM,COBRA GRASPER,IS4000	18	20	10%
471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	14	20	30%
471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	15	20	25%
471309	8MM,MEGA SUTURECUT ND,IS4000	15	20	25%
471344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	14	20	30%

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**UPDATED EXHIBIT F****Damages From EndoWrist Use Limit Suppression  
by Model and Named Plaintiff<sup>998</sup>**

<b>Plaintiff</b>	<b>Material Number and Description</b>	<b>System</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
Franciscan Health	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$86,900	\$86,900	\$45,100
Larkin Community Hospital	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$48,400	\$48,400	\$17,600
Valley Medical Center	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$27,500	\$27,500	\$4,400
Franciscan Health	420033 ASSEMBLY,BLACK DIAMOND MICRO FORCEPS,8MM	S/Si	\$0	\$0	\$0
Franciscan Health	420048 ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Valley Medical Center	420048 ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420049 ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	S/Si	\$47,000	\$47,000	\$33,000
Valley Medical Center	420049 ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$103,400	\$102,300	\$68,200
Larkin Community Hospital	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$74,800	\$74,800	\$37,400
Valley Medical Center	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$31,900	\$31,900	\$6,600
Franciscan Health	420110 ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	S/Si	\$41,850	\$41,850	\$18,900
Valley Medical Center	420110 ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	S/Si	\$0	\$0	\$0
Franciscan Health	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$0	\$0	\$0
Larkin Community Hospital	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$0	\$0	\$0
Valley Medical Center	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$0	\$0	\$0
Franciscan Health	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$36,450	\$36,450	\$29,700
Larkin Community Hospital	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$10,800	\$10,800	\$0
Valley Medical Center	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$10,800	\$10,800	\$0
Franciscan Health	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$265,600	\$265,600	\$163,200
Larkin Community Hospital	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$115,200	\$115,200	\$54,400
Valley Medical Center	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$96,000	\$96,000	\$22,400
Franciscan Health	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$25,000	\$25,000	\$19,000
Larkin Community Hospital	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$5,000	\$5,000	\$0
Valley Medical Center	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$0	\$0	\$0
Franciscan Health	420184 ASSEMBLY,PERMANENT CAUTERY SPATULA,8MM,I	S/Si	\$0	\$0	\$0
Franciscan Health	420189 ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	S/Si	\$10,000	\$10,000	\$8,000
Larkin Community Hospital	420189 ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	S/Si	\$1,000	\$1,000	\$0
Franciscan Health	420190 ASSEMBLY,COBRA GRASPER,8MM,IS2000	S/Si	\$9,900	\$9,900	\$9,900
Franciscan Health	420194 ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	S/Si	\$41,800	\$41,800	\$24,200
Valley Medical Center	420194 ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420203 ASSEMBLY,PERICARDIAL DISSECTOR,8MM,IS200	S/Si	\$0	\$0	\$0
Franciscan Health	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$108,000	\$108,000	\$68,850
Larkin Community Hospital	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$58,050	\$58,050	\$27,000
Valley Medical Center	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$71,550	\$71,550	\$10,800
Franciscan Health	420207 ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	-\$1,100	-\$1,100	\$1,100
Larkin Community Hospital	420207 ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	\$48,400	\$48,400	\$22,000
Valley Medical Center	420207 ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	\$2,200	\$2,200	\$0

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Franciscan Health	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$37,700	\$37,700	\$23,200
Larkin Community Hospital	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$8,700	\$8,700	\$0
Valley Medical Center	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$1,450	\$1,450	\$0
Franciscan Health	420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Valley Medical Center	420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420278	ASSEMBLY,GRASPING RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	S/Si	\$108,000	\$108,000	\$64,800
Valley Medical Center	420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	S/Si	\$7,200	\$7,200	\$0
Franciscan Health	420318	ASSEMBLY,SMALL GRASPING RETRACTOR,8MM,IS	S/Si	\$0	\$0	\$0
Franciscan Health	420344	ASSEMBLY,CURVED BIPOLAR DISSECTOR,8MM,IS	S/Si	\$0	\$0	\$0
Franciscan Health	470001	8MM,POTTS SCISSORS,IS4000	X/Xi	\$3,900	\$3,900	\$3,900
Franciscan Health	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$171,325	\$170,225	\$124,025
Larkin Community Hospital	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$42,900	\$42,900	\$20,900
Valley Medical Center	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$39,600	\$39,600	\$39,600
Franciscan Health	470007	8MM,ROUND TIP SCISSORS,IS4000	X/Xi	\$6,000	\$6,000	\$6,000
Franciscan Health	470048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$14,000	\$14,000	\$7,000
Franciscan Health	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$148,050	\$148,050	\$112,350
Larkin Community Hospital	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$3,150	\$3,150	\$2,100
Valley Medical Center	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$35,700	\$35,700	\$35,700
Franciscan Health	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$217,800	\$217,800	\$168,300
Larkin Community Hospital	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$67,100	\$67,100	\$34,100
Valley Medical Center	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$47,300	\$47,300	\$47,300
Franciscan Health	470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$189,000	\$184,950	\$141,750
Valley Medical Center	470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$13,500	\$13,500	\$13,500
Franciscan Health	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$1,084,800	\$1,081,600	\$926,400
Larkin Community Hospital	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$112,000	\$112,000	\$54,400
Valley Medical Center	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$382,400	\$382,400	\$382,400
Franciscan Health	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$138,200	\$138,200	\$114,200
Larkin Community Hospital	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$3,000	\$3,000	\$2,000
Valley Medical Center	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$8,800	\$8,800	\$8,800
Franciscan Health	470184	8MM,PERMANENT CAUTERY SPATULA,IS4000	X/Xi	\$111,600	\$111,600	\$82,600
Franciscan Health	470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$37,400	\$37,400	\$25,300
Larkin Community Hospital	470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$1,100	\$1,100	\$0
Franciscan Health	470194	8MM,MEGA NEEDLE DRIVER,IS4000	X/Xi	\$189,200	\$187,000	\$154,000
Franciscan Health	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$332,100	\$328,050	\$224,100
Larkin Community Hospital	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$86,400	\$86,400	\$44,550
Valley Medical Center	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$145,800	\$145,800	\$145,800
Franciscan Health	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$14,300	\$14,300	\$12,100
Larkin Community Hospital	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$13,200	\$13,200	\$4,400
Valley Medical Center	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$12,100	\$12,100	\$12,100
Valley Medical Center	470249	8MM,DUAL BLADE RETRACTOR,IS4000	X/Xi	\$17,500	\$17,500	\$17,500
Franciscan Health	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$31,200	\$31,200	\$27,600
Larkin Community Hospital	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$64,800	\$64,800	\$31,200
Valley Medical Center	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$121,200	\$121,200	\$121,200
Franciscan Health	470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$376,200	\$376,200	\$264,600
Valley Medical Center	470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$43,200	\$43,200	\$43,200

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Franciscan Health	470318	8MM,SMALL GRASPING RETRACTOR,IS4000	X/Xi	\$43,200	\$43,200	\$36,000
Franciscan Health	470344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$24,300	\$24,300	\$18,900
Franciscan Health	471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$54,825	\$54,825	\$54,825
Valley Medical Center	471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$12,113	\$12,113	\$12,113
Franciscan Health	471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$19,980	\$19,980	\$19,980
Valley Medical Center	471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$3,780	\$3,780	\$3,780
Franciscan Health	471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$25,110	\$25,110	\$25,110
Valley Medical Center	471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$5,130	\$5,130	\$5,130
Franciscan Health	471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$81,921	\$81,921	\$81,921
Valley Medical Center	471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$2,961	\$2,961	\$2,961
Franciscan Health	471190	8MM,COBRA GRASPER,IS4000	X/Xi	\$3,888	\$3,888	\$3,888
Franciscan Health	471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$96,600	\$96,600	\$96,600
Valley Medical Center	471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$48,720	\$48,720	\$48,720
Franciscan Health	471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$7,013	\$7,013	\$7,013
Valley Medical Center	471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$22,313	\$22,313	\$22,313
Franciscan Health	471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$93,844	\$93,844	\$93,844
Valley Medical Center	471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$16,406	\$16,406	\$16,406
Franciscan Health	471344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$2,268	\$2,268	\$2,268
Franciscan Health	TOTAL		S/Si	\$920,500	\$919,400	\$577,150
Franciscan Health	TOTAL		X/Xi	\$3,518,023	\$3,503,423	\$2,834,573
Larkin Community Hospital	TOTAL		S/Si	\$370,350	\$370,350	\$158,400
Larkin Community Hospital	TOTAL		X/Xi	\$393,650	\$393,650	\$193,650
Valley Medical Center	TOTAL		S/Si	\$248,600	\$248,600	\$44,200
Valley Medical Center	TOTAL		X/Xi	\$978,522	\$978,522	\$978,522

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**UPDATED EXHIBIT G****Damages from EndoWrist Use Limit Suppression  
by Model for the Proposed Class<sup>999</sup>**

<b>Material Number and Description</b>	<b>System</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
420001	ASSEMBLY,POTTS SCISSORS,8MM,IS2000	\$1,247,788	\$1,237,063	\$715,056
420006	ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	\$60,672,785	\$60,071,635	\$34,394,793
420007	ASSEMBLY,ROUND TIP SCISSORS,8MM,IS2000	\$1,088,165	\$1,074,515	\$557,815
420033	ASSEMBLY,BLACK DIAMOND MICRO FORCEPS,8MM	\$337,788	\$334,038	\$197,494
420036	ASSEMBLY,DEBAKEY FORCEPS,8MM,IS2000	\$510,070	\$494,345	\$242,860
420048	ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	\$2,554,408	\$2,504,183	\$1,264,525
420049	ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	\$17,791,219	\$17,585,469	\$10,009,389
420093	ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	\$57,301,793	\$56,781,493	\$33,781,841
420110	ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	\$3,006,210	\$2,968,410	\$1,626,650
420121	ASSEMBLY,FINE TISSUE FORCEPS,8MM,IS2000	\$27,967	\$27,967	\$15,367
420157	ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	\$0	\$0	\$0
420171	ASSEMBLY,MICRO BIPOLAR FORCEPS,8MM,IS200	\$650,711	\$648,011	\$380,781
420172	ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	\$30,590,853	\$30,287,103	\$16,791,335
420178	8MM,CURVED SCISSORS,IS2000	\$209,000	\$209,000	\$209,000
420179	ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	\$151,615,147	\$150,138,347	\$89,430,733
420181	ASSEMBLY,RESANO FORCEPS,8MM,IS2000	\$185,764	\$181,364	\$80,190
420183	ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	\$11,811,360	\$11,690,360	\$6,711,720
420184	ASSEMBLY,PERMANENT CAUTERY SPATULA,8MM,I	\$4,308,675	\$4,261,675	\$2,348,780
420189	ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	\$3,320,960	\$3,289,960	\$1,634,565
420190	ASSEMBLY,COBRA GRASPER,8MM,IS2000	\$1,954,779	\$1,954,779	\$1,954,779
420192	ASSEMBLY,VALVE HOOK,8MM,IS2000	\$12,150	\$12,150	\$4,050
420194	ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	\$25,236,758	\$24,963,958	\$14,427,973
420203	ASSEMBLY,PERICARDIAL DISSECTOR,8MM,IS200	\$27,448	\$27,448	\$16,448
420204	ASSEMBLY,ATRIAL RETRACTOR,8MM,IS2000	\$156,196	\$151,771	\$58,625
420205	ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	\$70,199,443	\$69,556,923	\$41,487,638
420207	ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	\$3,991,234	\$3,951,634	\$2,350,863
420215	ASSEMBLY,CARDIAC PROBE GRASPER,8MM,IS200	\$55,825	\$55,825	\$27,225
420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	\$25,986,200	\$25,722,300	\$13,707,660
420246	ASSEMBLY,ATRIAL RETRACTOR SHORT RIGHT,8M	\$282,435	\$279,485	\$165,185
420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	\$232,017	\$229,067	\$111,067
420278	ASSEMBLY,GRASPING RETRACTOR,8MM,IS2000	\$1,288,906	\$1,269,706	\$595,742
420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	\$44,187,617	\$43,794,017	\$26,711,109
420318	ASSEMBLY,SMALL GRASPING RETRACTOR,8MM,IS	\$1,822,442	\$1,815,242	\$859,182
420344	ASSEMBLY,CURVED BIPOLAR DISSECTOR,8MM,IS	\$1,205,022	\$1,194,222	\$553,642
470001	8MM,POTTS SCISSORS,IS4000	\$4,810,576	\$4,797,901	\$3,968,596
470006	8MM,LARGE NEEDLE DRIVER,IS4000	\$94,756,984	\$94,359,579	\$70,985,929
470007	8MM,ROUND TIP SCISSORS,IS4000	\$3,141,289	\$3,140,271	\$2,695,356
470033	8MM,BLACK DIAMOND MICRO FORCEPS,IS4000	\$1,189,258	\$1,185,508	\$978,288

<sup>999</sup> IS28 Damages Estimation v18.

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470036	8MM,DEBAKEY FORCEPS,IS4000	X/Xi	\$1,728,658	\$1,725,658	\$1,363,753
470048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$4,125,736	\$4,104,736	\$2,967,796
470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$52,927,155	\$52,766,765	\$41,513,545
470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$93,226,728	\$92,934,128	\$72,015,043
470171	8MM,MICRO BIPOLAR FORCEPS,IS4000	X/Xi	\$1,338,453	\$1,329,753	\$1,007,753
470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$57,534,029	\$57,292,379	\$42,381,027
470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$433,098,917	\$432,258,487	\$379,151,367
470181	8MM,RESANO FORCEPS,IS4000	X/Xi	\$573,700	\$573,700	\$484,570
470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$43,277,205	\$43,193,165	\$36,807,905
470184	8MM,PERMANENT CAUTERY SPATULA,IS4000	X/Xi	\$11,222,402	\$11,185,362	\$8,887,162
470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$4,865,283	\$4,845,443	\$3,635,478
470194	8MM,MEGA NEEDLE DRIVER,IS4000	X/Xi	\$50,291,534	\$50,172,684	\$43,406,099
470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$147,050,478	\$146,469,978	\$110,766,026
470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$12,554,691	\$12,517,231	\$10,723,496
470215	8MM,CARDIAC PROBE GRASPER,IS4000	X/Xi	\$650,493	\$649,293	\$559,293
470246	8MM,ATRIAL RETRACTOR SHORT RIGHT,IS4000	X/Xi	\$1,362,350	\$1,362,350	\$1,113,360
470249	8MM,DUAL BLADE RETRACTOR,IS4000	X/Xi	\$1,971,000	\$1,958,100	\$1,629,730
470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$21,294,858	\$21,233,658	\$17,044,308
470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$85,580,973	\$85,336,173	\$68,025,463
470318	8MM,SMALL GRASPING RETRACTOR,IS4000	X/Xi	\$20,815,519	\$20,743,519	\$16,897,469
470344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$7,465,935	\$7,409,235	\$4,984,235
471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$24,395,054	\$24,395,054	\$24,395,054
471048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$288,009	\$288,009	\$288,009
471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$7,187,747	\$7,187,747	\$7,187,747
471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$10,603,329	\$10,603,329	\$10,603,329
471171	8MM,MICRO BIPOLAR FORCEPS,IS4000	X/Xi	\$525,283	\$525,283	\$525,283
471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$20,209,447	\$20,209,447	\$20,209,447
471190	8MM,COBRA GRASPER,IS4000	X/Xi	\$747,186	\$747,186	\$747,186
471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$46,001,323	\$46,001,323	\$46,001,323
471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$6,689,291	\$6,689,291	\$6,689,291
471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$27,400,449	\$27,400,449	\$27,400,449
471344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$2,392,966	\$2,392,966	\$2,392,966
TOTAL		S/Si	\$523,869,138	\$518,763,468	\$303,424,086
TOTAL		X/Xi	\$1,303,294,285	\$1,299,985,138	\$1,090,433,128



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**UPDATED EXHIBIT H****Damages from Combination of Price Effect and Use Limit Suppression  
by Model and Named Plaintiff<sup>1000</sup>**

Plaintiff	Material Number and Description	System	Damages if Started 5/21/2017	Damages if Started 5/31/2017	Damages if Started 7/11/2018
Franciscan Health	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$104,280	\$104,280	\$54,120
Larkin Community Hospital	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$58,080	\$58,080	\$21,120
Valley Medical Center	420006 ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	S/Si	\$33,000	\$33,000	\$5,280
Franciscan Health	420033 ASSEMBLY,BLACK DIAMOND MICRO FORCEPS,8MM	S/Si	\$0	\$0	\$0
Franciscan Health	420048 ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Valley Medical Center	420048 ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420049 ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	S/Si	\$56,400	\$56,400	\$39,600
Valley Medical Center	420049 ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$124,080	\$122,760	\$81,840
Larkin Community Hospital	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$89,760	\$89,760	\$44,880
Valley Medical Center	420093 ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	S/Si	\$38,280	\$38,280	\$7,920
Franciscan Health	420110 ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	S/Si	\$50,220	\$50,220	\$22,680
Valley Medical Center	420110 ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	S/Si	\$0	\$0	\$0
Franciscan Health	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$0	\$0	\$0
Larkin Community Hospital	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$7,650	\$7,650	\$900
Valley Medical Center	420157 ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	S/Si	\$0	\$0	\$0
Franciscan Health	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$43,740	\$43,740	\$35,640
Larkin Community Hospital	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$12,960	\$12,960	\$0
Valley Medical Center	420172 ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	S/Si	\$12,960	\$12,960	\$0
Franciscan Health	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$318,720	\$318,720	\$195,840
Larkin Community Hospital	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$138,240	\$138,240	\$65,280
Valley Medical Center	420179 ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	S/Si	\$115,200	\$115,200	\$26,880
Franciscan Health	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$30,000	\$30,000	\$22,800
Larkin Community Hospital	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$6,000	\$6,000	\$0
Valley Medical Center	420183 ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	S/Si	\$0	\$0	\$0
Franciscan Health	420184 ASSEMBLY,PERMANENT CAUTERY SPATULA,8MM,I	S/Si	\$0	\$0	\$0
Franciscan Health	420189 ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	S/Si	\$12,000	\$12,000	\$9,600
Larkin Community Hospital	420189 ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	S/Si	\$1,200	\$1,200	\$0
Franciscan Health	420190 ASSEMBLY,COBRA GRASPER,8MM,IS2000	S/Si	\$11,880	\$11,880	\$11,880
Franciscan Health	420194 ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	S/Si	\$50,160	\$50,160	\$29,040
Valley Medical Center	420194 ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420203 ASSEMBLY,PERICARDIAL DISSECTOR,8MM,IS200	S/Si	\$0	\$0	\$0
Franciscan Health	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$129,600	\$129,600	\$82,620
Larkin Community Hospital	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$69,660	\$69,660	\$32,400
Valley Medical Center	420205 ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	S/Si	\$85,860	\$85,860	\$12,960
Franciscan Health	420207 ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	-\$1,320	-\$1,320	\$1,320
Larkin Community Hospital	420207 ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	\$58,080	\$58,080	\$26,400

<sup>1000</sup> IS28 Damages Estimation v18.

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Valley Medical Center	420207	ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	S/Si	\$2,640	\$2,640	\$0
Franciscan Health	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$45,240	\$45,240	\$27,840
Larkin Community Hospital	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$10,440	\$10,440	\$0
Valley Medical Center	420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	S/Si	\$1,740	\$1,740	\$0
Franciscan Health	420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Valley Medical Center	420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420278	ASSEMBLY,GRASPING RETRACTOR,8MM,IS2000	S/Si	\$0	\$0	\$0
Franciscan Health	420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	S/Si	\$129,600	\$129,600	\$77,760
Valley Medical Center	420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	S/Si	\$8,640	\$8,640	\$0
Franciscan Health	420318	ASSEMBLY,SMALL GRASPING RETRACTOR,8MM,IS	S/Si	\$0	\$0	\$0
Franciscan Health	420344	ASSEMBLY,CURVED BIPOLAR DISSECTOR,8MM,IS	S/Si	\$0	\$0	\$0
Franciscan Health	470001	8MM,POTTS SCISSORS,IS4000	X/Xi	\$4,680	\$4,680	\$4,680
Franciscan Health	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$205,590	\$204,270	\$148,830
Larkin Community Hospital	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$51,480	\$51,480	\$25,080
Valley Medical Center	470006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$47,520	\$47,520	\$47,520
Franciscan Health	470007	8MM,ROUND TIP SCISSORS,IS4000	X/Xi	\$7,200	\$7,200	\$7,200
Franciscan Health	470048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$16,800	\$16,800	\$8,400
Franciscan Health	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$177,660	\$177,660	\$134,820
Larkin Community Hospital	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$3,780	\$3,780	\$2,520
Valley Medical Center	470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$42,840	\$42,840	\$42,840
Franciscan Health	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$261,360	\$261,360	\$201,960
Larkin Community Hospital	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$80,520	\$80,520	\$40,920
Valley Medical Center	470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$56,760	\$56,760	\$56,760
Franciscan Health	470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$226,800	\$221,940	\$170,100
Valley Medical Center	470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$16,200	\$16,200	\$16,200
Franciscan Health	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$1,301,760	\$1,297,920	\$1,111,680
Larkin Community Hospital	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$134,400	\$134,400	\$65,280
Valley Medical Center	470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$458,880	\$458,880	\$458,880
Franciscan Health	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$165,840	\$165,840	\$137,040
Larkin Community Hospital	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$3,600	\$3,600	\$2,400
Valley Medical Center	470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$10,560	\$10,560	\$10,560
Franciscan Health	470184	8MM,PERMANENT CAUTERY SPATULA,IS4000	X/Xi	\$133,920	\$133,920	\$99,120
Franciscan Health	470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$44,880	\$44,880	\$30,360
Larkin Community Hospital	470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$1,320	\$1,320	\$0
Franciscan Health	470194	8MM,MEGA NEEDLE DRIVER,IS4000	X/Xi	\$227,040	\$224,400	\$184,800
Franciscan Health	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$398,520	\$393,660	\$268,920
Larkin Community Hospital	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$103,680	\$103,680	\$53,460
Valley Medical Center	470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$174,960	\$174,960	\$174,960
Franciscan Health	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$17,160	\$17,160	\$14,520
Larkin Community Hospital	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$15,840	\$15,840	\$5,280
Valley Medical Center	470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$14,520	\$14,520	\$14,520
Valley Medical Center	470249	8MM,DUAL BLADE RETRACTOR,IS4000	X/Xi	\$21,000	\$21,000	\$21,000
Franciscan Health	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$37,440	\$37,440	\$33,120
Larkin Community Hospital	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$77,760	\$77,760	\$37,440
Valley Medical Center	470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$145,440	\$145,440	\$145,440
Franciscan Health	470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$451,440	\$451,440	\$317,520

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Valley Medical Center	470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$51,840	\$51,840	\$51,840
Franciscan Health	470318	8MM,SMALL GRASPING RETRACTOR,IS4000	X/Xi	\$51,840	\$51,840	\$43,200
Franciscan Health	470344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$29,160	\$29,160	\$22,680
Franciscan Health	471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$87,720	\$87,720	\$87,720
Valley Medical Center	471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$19,380	\$19,380	\$19,380
Franciscan Health	471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$55,944	\$55,944	\$55,944
Valley Medical Center	471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$10,584	\$10,584	\$10,584
Franciscan Health	471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$70,308	\$70,308	\$70,308
Valley Medical Center	471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$14,364	\$14,364	\$14,364
Franciscan Health	471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$120,151	\$120,151	\$120,151
Valley Medical Center	471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$4,343	\$4,343	\$4,343
Franciscan Health	471190	8MM,COBRA GRASPER,IS4000	X/Xi	\$10,886	\$10,886	\$10,886
Franciscan Health	471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$141,680	\$141,680	\$141,680
Valley Medical Center	471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$71,456	\$71,456	\$71,456
Franciscan Health	471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$11,220	\$11,220	\$11,220
Valley Medical Center	471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$35,700	\$35,700	\$35,700
Franciscan Health	471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$150,150	\$150,150	\$150,150
Valley Medical Center	471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$26,250	\$26,250	\$26,250
Franciscan Health	471344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$3,326	\$3,326	\$3,326
Franciscan Health	TOTAL		S/Si	\$1,104,600	\$1,103,280	\$692,580
Franciscan Health	TOTAL		X/Xi	\$4,410,476	\$4,392,956	\$3,590,336
Larkin Community Hospital	TOTAL		S/Si	\$452,070	\$452,070	\$190,980
Larkin Community Hospital	TOTAL		X/Xi	\$472,380	\$472,380	\$232,380
Valley Medical Center	TOTAL		S/Si	\$298,320	\$298,320	\$53,040
Valley Medical Center	TOTAL		X/Xi	\$1,222,597	\$1,222,597	\$1,222,597

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**UPDATED EXHIBIT I****Damages from Combination of Price Effect  
and Use Limit Suppression  
by Model for the Proposed Class<sup>1001</sup>**

<b>Material Number and Description</b>	<b>System</b>	<b>Damages if Started 5/21/2017</b>	<b>Damages if Started 5/31/2017</b>	<b>Damages if Started 7/11/2018</b>
420001	ASSEMBLY,POTTS SCISSORS,8MM,IS2000	\$1,497,345	\$1,484,475	\$858,067
420006	ASSEMBLY,LARGE NEEDLE DRIVER,8MM,IS2000	\$72,807,344	\$72,085,960	\$41,273,752
420007	ASSEMBLY,ROUND TIP SCISSORS,8MM,IS2000	\$1,305,798	\$1,289,418	\$669,378
420033	ASSEMBLY,BLACK DIAMOND MICRO FORCEPS,8MM	\$540,461	\$534,461	\$315,990
420036	ASSEMBLY,DEBAKEY FORCEPS,8MM,IS2000	\$612,084	\$593,214	\$291,432
420048	ASSEMBLY,LONG TIP FORCEPS,8MM,IS2000	\$3,065,289	\$3,005,019	\$1,517,430
420049	ASSEMBLY,CADIERE FORCEPS,8MM,IS2000	\$21,349,464	\$21,102,564	\$12,011,267
420093	ASSEMBLY,PROGRASP FORCEPS,8MM,IS2000	\$68,762,152	\$68,137,792	\$40,538,208
420110	ASSEMBLY,PRECISE BIPOLAR FORCEPS,8MM,IS2	\$3,607,452	\$3,562,092	\$1,951,980
420121	ASSEMBLY,FINE TISSUE FORCEPS,8MM,IS2000	\$44,747	\$44,747	\$24,587
420157	ASSEMBLY,SNAP-FIT SCALPEL INSTRUMENT,8MM	\$57,600	\$57,600	\$36,900
420171	ASSEMBLY,MICRO BIPOLAR FORCEPS,8MM,IS200	\$780,854	\$777,614	\$456,938
420172	ASSEMBLY,MARYLAND BIPOLAR FORCEPS,8MM,IS	\$36,709,024	\$36,344,524	\$20,149,602
420178	8MM,CURVED SCISSORS,IS2000	\$250,800	\$250,800	\$250,800
420179	ASSEMBLY,MONOPOLAR CURVED SCISSORS,8MM,I	\$181,938,176	\$180,166,016	\$107,316,880
420181	ASSEMBLY,RESANO FORCEPS,8MM,IS2000	\$222,917	\$217,637	\$96,228
420183	ASSEMBLY,PERMANENT CAUTERY HOOK,8MM,IS20	\$14,173,632	\$14,028,432	\$8,054,064
420184	ASSEMBLY,PERMANENT CAUTERY SPATULA,8MM,I	\$5,170,410	\$5,114,010	\$2,818,536
420189	ASSEMBLY,DOUBLE FENESTRATED GRASPER,8MM,	\$3,985,152	\$3,947,952	\$1,961,478
420190	ASSEMBLY,COBRA GRASPER,8MM,IS2000	\$2,345,735	\$2,345,735	\$2,345,735
420192	ASSEMBLY,VALVE HOOK,8MM,IS2000	\$19,440	\$19,440	\$6,480
420194	ASSEMBLY,MEGA NEEDLE DRIVER,8MM,IS2000	\$30,284,110	\$29,956,750	\$17,313,568
420203	ASSEMBLY,PERICARDIAL DISSECTOR,8MM,IS200	\$32,938	\$32,938	\$19,738
420204	ASSEMBLY,ATRIAL RETRACTOR,8MM,IS2000	\$187,436	\$182,126	\$70,350
420205	ASSEMBLY,FENESTRATED BIPOLAR FORCEPS,8MM	\$84,239,336	\$83,468,312	\$49,785,168
420207	ASSEMBLY,TENACULUM FORCEPS,8MM,IS2000	\$4,789,481	\$4,741,961	\$2,821,035
420215	ASSEMBLY,CARDIAC PROBE GRASPER,8MM,IS200	\$66,990	\$66,990	\$32,670
420227	ASSEMBLY,PK DISSECTING FORCEPS,8MM,IS200	\$31,183,440	\$30,866,760	\$16,449,193
420246	ASSEMBLY,ATRIAL RETRACTOR SHORT RIGHT,8M	\$338,922	\$335,382	\$198,222
420249	ASSEMBLY,DUAL BLADE RETRACTOR,8MM,IS2000	\$278,421	\$274,881	\$133,281
420278	ASSEMBLY,GRASPING RETRACTOR,8MM,IS2000	\$1,546,687	\$1,523,647	\$714,890
420309	ASSEMBLY,MEGASUTURECUT ND,IS2000	\$53,025,140	\$52,552,820	\$32,053,332
420318	ASSEMBLY,SMALL GRASPING RETRACTOR,8MM,IS	\$2,186,931	\$2,178,291	\$1,031,018
420344	ASSEMBLY,CURVED BIPOLAR DISSECTOR,8MM,IS	\$1,446,027	\$1,433,067	\$664,371
470001	8MM,POTTS SCISSORS,IS4000	\$5,772,691	\$5,757,481	\$4,762,315
470006	8MM,LARGE NEEDLE DRIVER,IS4000	\$113,708,384	\$113,231,496	\$85,183,112
470007	8MM,ROUND TIP SCISSORS,IS4000	\$3,769,547	\$3,768,326	\$3,234,428

<sup>1001</sup> IS28 Damages Estimation v18.

## Highly Confidential – Subject to Protective Order

470033	8MM,BLACK DIAMOND MICRO FORCEPS,IS4000	X/Xi	\$1,902,812	\$1,896,812	\$1,565,260
470036	8MM,DEBAKEY FORCEPS,IS4000	X/Xi	\$2,074,390	\$2,070,790	\$1,636,504
470048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$4,950,883	\$4,925,683	\$3,561,355
470049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$63,512,584	\$63,320,116	\$49,816,252
470093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$111,872,072	\$111,520,952	\$86,418,048
470171	8MM,MICRO BIPOLAR FORCEPS,IS4000	X/Xi	\$1,606,143	\$1,595,703	\$1,209,303
470172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$69,040,832	\$68,750,856	\$50,857,232
470179	8MM,MONOPOLAR CURVED SCISSORS,IS4000	X/Xi	\$519,718,688	\$518,710,176	\$454,981,632
470181	8MM,RESANO FORCEPS,IS4000	X/Xi	\$688,440	\$688,440	\$581,484
470183	8MM,PERMANENT CAUTERY HOOK,IS4000	X/Xi	\$51,932,644	\$51,831,796	\$44,169,484
470184	8MM,PERMANENT CAUTERY SPATULA,IS4000	X/Xi	\$13,466,882	\$13,422,434	\$10,664,594
470190	8MM,COBRA GRASPER,IS4000	X/Xi	\$5,838,340	\$5,814,532	\$4,362,574
470194	8MM,MEGA NEEDLE DRIVER,IS4000	X/Xi	\$60,349,840	\$60,207,220	\$52,087,320
470205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$176,460,576	\$175,763,968	\$132,919,232
470207	8MM,TENACULUM FORCEPS,IS4000	X/Xi	\$15,065,629	\$15,020,677	\$12,868,195
470215	8MM,CARDIAC PROBE GRASPER,IS4000	X/Xi	\$780,591	\$779,151	\$671,151
470246	8MM,ATRIAL RETRACTOR SHORT RIGHT,IS4000	X/Xi	\$1,634,820	\$1,634,820	\$1,336,032
470249	8MM,DUAL BLADE RETRACTOR,IS4000	X/Xi	\$2,365,200	\$2,349,720	\$1,955,676
470296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$25,553,830	\$25,480,390	\$20,453,170
470309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$102,697,168	\$102,403,408	\$81,630,552
470318	8MM,SMALL GRASPING RETRACTOR,IS4000	X/Xi	\$24,978,622	\$24,892,222	\$20,276,962
470344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$8,959,121	\$8,891,081	\$5,981,082
471006	8MM,LARGE NEEDLE DRIVER,IS4000	X/Xi	\$39,032,088	\$39,032,088	\$39,032,088
471048	8MM,LONG TIP FORCEPS,IS4000	X/Xi	\$806,425	\$806,425	\$806,425
471049	8MM,CADIERE FORCEPS,IS4000	X/Xi	\$20,125,692	\$20,125,692	\$20,125,692
471093	8MM,PROGRASP FORCEPS,IS4000	X/Xi	\$29,689,320	\$29,689,320	\$29,689,320
471171	8MM,MICRO BIPOLAR FORCEPS,IS4000	X/Xi	\$770,415	\$770,415	\$770,415
471172	8MM,MARYLAND BIPOLAR FORCEPS,IS4000	X/Xi	\$29,640,522	\$29,640,522	\$29,640,522
471190	8MM,COBRA GRASPER,IS4000	X/Xi	\$2,092,121	\$2,092,121	\$2,092,121
471205	8MM,FENESTRATED BIPOLAR FORCEPS,IS4000	X/Xi	\$67,468,608	\$67,468,608	\$67,468,608
471296	8MM,LARGE SUTURECUT NEEDLE DRIVER,IS4000	X/Xi	\$10,702,865	\$10,702,865	\$10,702,865
471309	8MM,MEGA SUTURECUT ND,IS4000	X/Xi	\$43,840,716	\$43,840,716	\$43,840,716
471344	8MM,CURVED BIPOLAR DISSECTOR,IS4000	X/Xi	\$3,509,683	\$3,509,683	\$3,509,683